

Revision of the Oedaspidini of the Afrotropical Region (Diptera: Tephritidae: Tephritinae)

by

Amnon Freidberg and Fini Kaplan

(Department of Zoology, George S. Wise Faculty of Life Sciences,
Tel Aviv University, Tel Aviv 69978, Israel)

ABSTRACT

The Afrotropical fauna of Oedaspidini is revised. Three genera are recognised: *Oedaspis* Loew (17 species), *Oedoncus* Speiser (1 species) and *Xenodorella* Munro (1 species). *Embaspis* Munro and *Tylaspis* Munro are synonymised with *Oedaspis*. Nine new species (*amani*, *congoensis*, *hyalibasis*, *montana*, *nyx*, *plucheivora*, *reducta*, *reticulata* and *serrata*) are described, all in *Oedaspis*. A monophyletic group (*trapezoidalis*), containing five species, is established within *Oedaspis*. *Oedaspis auriella* Munro is transferred to *Oedosphenella* Frey (Tephritini). *Embaspis inflata* Munro, *E. pauliani* Munro and *Tylaspis quinotata* Munro are transferred to *Oedaspis*. Keys to and comments on all Old World genera and Afrotropical species are given. Head profiles of Afrotropical genera, wings of all Afrotropical species, and terminalia (particularly of members of the *trapezoidalis* group) are illustrated.

CONTENTS

	Page
Abstract	51
Introduction	52
Taxonomy	57
Tribe Oedaspidini Hering	57
Key to Old World genera	58
<i>Oedaspis</i> Loew	58
Key to Afrotropical species	61
Descriptions	63
<i>Oedoncus</i> Speiser	84
<i>Xenodorella</i> Munro	87
[<i>Chrysotrypanea</i> Malloch]	88
[<i>Oedaspoides</i> Hendel]	88
[<i>Ptiloedaspis</i> Bezzi]	90
Tribe Tephritini Newman	90
<i>Oedosphenella</i> Frey	90
Relationships with other groups	91
Acknowledgements	92
References	92

INTRODUCTION

In this revision we treat all Afrotropical genera and species of Oedaspidini. In addition, to gain better perspective, we provide a short overview of the systematic status of the tribe, with a key to and discussions of all Old World genera. We follow Thompson *et al.* (in preparation) in attributing the group a tribal rank.

The Oedaspidini (Tephritinae), established by Hering (1947) as the subfamily Oedaspinae [sic] and containing about 110 species, is one of the smallest and least understood tribes in the Tephritidae. The tribe is widespread over both Eastern and Western Hemispheres, but is more diverse in the Western Hemisphere (Thompson *et al.*, in preparation). The immature stages of most species cause the formation of stem galls on various Asteraceae (=Compositae) (Freidberg 1984). Adults are usually scarce on their hosts, their flight period is short, and rearing them from galls is often difficult and only partially successful. The tribe is, therefore, poorly represented in most collections, and descriptions of many species are based on single or few specimens.

There is no comprehensive revision of the tribe, and the major works dealing with various of its segments are Aczél (1953), Aldrich (1929), Bezzi (1910 1913), Foote (1980) and Hendel (1927b). Hering (1947) characterised his so-called subfamily by a combination of two characters: a swollen and shiny scutellum together with a wing pattern rich in transverse bands. We agree that both characters are synapomorphies of the Oedaspidini, but they are by no means consistent throughout the tribe. A swollen (strongly convex) and shiny scutellum is common to many ceratitines (Trypetinae) but occurs in only a few nonoedaspidine Tephritinae. A banded wing pattern is widespread in the Trypetinae, but uncommon in the Tephritinae (occurring in the latter subfamily in most Oedaspidini and Terelliini, many Myopitini and some Tephritini). More specifically, the particular types of banded pattern that occur in the Oedaspidini (see below) are either unknown or seldom occur in other Tephritinae. The following exceptions to these two characters should however be kept in mind: several Afrotropical species of *Oedaspis* Loew have a flat or only slightly convex scutellum; numerous New World species, especially in the American genus *Procecidochares* Hendel, have only 3–4 bands on the wing (as opposed to 5 in most *Oedaspis* species).

A possible third synapomorphy was reported by Freidberg & Kugler (1989), who noted a prevalence in the tribe of an unusually small ('almost vestigial') and apparently non-functional proboscis. Most Old World species and some New World species are characterised by such a proboscis, which is a unique apomorphic feature within the Tephritidae and is apparently associated with nonfeeding adults and autogenic females. An additional, biological apomorphy is the faculty for gall formation. To these main apomorphies (of the proboscis, scutellum, wing pattern and gall formation), several others may be added, such as wide frons, dense clusters of white setulae on the thorax, arrow-like aculeus (eg. Fig. 54) and robust body. However, these latter characters are even less reliably diagnostic for the group as a whole than the four character sets discussed earlier.

Thus, while it seems that at least most taxa currently treated under Oedaspidini (Thompson *et al.*, in preparation) indeed form a monophyletic group, the synapomorphies of this group are rather difficult to demonstrate.

Hering (1947) also suggested the division of his subfamily into two tribes, Oedaspini [sic] and Cecidocharini, based on the relative length of the posterior two terga in the female. While these tribes may be monophyletic, the character Hering used to separate them is unreliable and too variable, at least within *Oedaspis*, and should therefore be re-evaluated.

Some of the above-mentioned problems are beyond the scope of this paper and should be addressed within the context of a comprehensive revision of the tribe. Such a revision should also attempt to resolve generic inter-relationships and the relationships between the faunas of the Old and New World. For example, the separation of *Oedaspis* into subgenera, on one hand, and the retention of other Old World taxa as distinct genera, on the other hand (see Thompson *et al.* (in preparation) for the current classification outline), raise questions as to whether the current classification is consistent and sound.

We thoroughly searched the literature dealing with Afrotropical Oedaspidini, but otherwise gave attention to general studies only. Beginning with the description of the first Afrotropical taxon, *Oedoncus taenipalpis* Speiser, 1924, research on Afrotropical Oedaspidini has been characterised by scattered descriptions, without any monographic or revisionary work. Up until 1967, four genera and ten species had been described, almost all by Munro (1935a 1938 1939a, b, d 1952 1953 1967). The tephritid chapter in the recent Afrotropical Catalogue (Cogan & Munro 1980) is the only summary now available, but the section dealing with the Oedaspidini (as Oedaspini [sic]) includes some taxa that do not belong to the tribe. We concur with Hancock (1986) that of the eight genera Cogan & Munro included in the tribe, only *Embaspis* Munro, *Oedaspis*, *Oedoncus* Speiser and *Tylaspis* Munro should remain there, but we also include *Xenodorella* Munro. Other Afrotropical genera Cogan & Munro (1980) listed under Oedaspidini should be re-assigned: *Acroneus* Munro and *Parafreutreta* Munro to the *Sphenella* group in the Tephritini (Freidberg & Hancock 1989), and *Afreutreta* Bezzi and *Cosmetothrix* Munro to the Tephritini, where they form a monophyletic group of uncertain relationships (Freidberg & Kaplan, in preparation). We consider *Embaspis* and *Tylaspis* to be junior synonyms of *Oedaspis* (see discussion under *Oedaspis*), hence we are left with only three Afrotropical oedaspidine genera, and these include nine species (*Oedaspis auriella* Munro, is here transferred to another genus in the Tephritini). Nine additional species are described and named in this paper, all in *Oedaspis*, and an additional, possibly undescribed species of *Oedaspis* is recorded but not named. Based on the small number of specimens generally available in collections for most species of this group, we expect that more species will be discovered in the Afrotropical Region. Of the 19 species of Afrotropical Oedaspidini treated in this paper, only four (*Oedaspis maraisi* Munro, *O. reticulata* sp. n., *O. russa* Munro and *Oedoncus taenipalpis*) were reared or collected in significant numbers. The remaining species are represented in collections by an average of 2–3 specimens, with about one-third of the species

represented by single specimens only. These statistics clearly suggest insufficient collecting of the group.

To better understand the Afrotropical fauna, we have studied representatives of most Old World genera and subgenera. The broader outlook thus acquired led, for example, to the synonymy of *Embaspis* and *Tylaspis* with *Oedaspis*. At the same time it gave us a clear indication that the Palaearctic *Ptiloedaspis* Bezzi and Australian *Chrysotrypanea* Malloch and *Oedaspoides* Hendel should be similarly synonymised with *Oedaspis*, because differences between these genera are generally trivial or clinal. However, because we have not made an in-depth study of these taxa, we refrain from synonymising them here. Instead, we include them in the following key to Old World genera, and briefly summarise our observations on them. The key to genera is therefore artificial, relying on minor characters in some couplets. Furthermore, it is still necessary to survey the Old World fauna for additional, obscure, genera that were possibly placed in other tribes instead of Oedaspidini (such as *Chrysotrypanea*, placed by Hardy & Foote (1989) in the Tephritini). We decided to include this key to genera, despite its weaknesses, because such a key has never been published.

There is no comprehensive study on the biology of the Oedaspidini, but Freidberg's (1984) review of gall Tephritidae treats various aspects of this topic. Publications dealing with Oedaspidini and not included in that review are Dodson (1987), Goeden & Headrick (1990), Silverman & Goeden (1980) and Tauber & Tauber (1968), all dealing with North American species. Almost all species reared to date are stem-gall formers on various Asteraceae; a few are either flowerhead-gall formers or develop in the crown without causing the formation of galls. There is great variation in the ecology, phenology, behaviour and interrelationships with the host plant, including the structure and biology of the galls. For example, species may be univoltine or multivoltine, and galls may be simple pleural swellings (pleurocecidia) or elaborate terminal galls (acrocecidia). Almost everything known about the biology of the Afrotropical species was recorded in Munro's papers, which are listed in the References section, and little original information is added here. For each host plant recorded in this paper, the tribe of Asteraceae is added in parentheses.

The only two species of economic importance within the tribe belong to the American genus *Procecidochares* Hendel (White & Elson-Harris 1992). Both *P. utilis* Stone and *P. alani* Steyskal have been introduced to Hawaii and some Old World countries to combat their host plants, the weeds *Eupatorium adenophorum* and *Ageratina riparia* respectively. *P. utilis* was very successful in doing so, at least in Hawaii (Bess & Haramoto 1958). None of the species of the tribe have been recorded as agricultural pests.

Terminology follows McAlpine (1981), and for more specific terms Freidberg & Mathis (1986). We have adopted the term 'syntergosternite 7' that Norrbom & Kim (1988) proposed as a substitute for the older term 'oviscape'. 'Syntergosternal measure' is defined as the number of terga immediately preceding syntergosternite 7 with combined length equal to the length of syntergosternite 7.

The wing pattern of most oedaspidines is banded but difficult to characterise.

The following section deals briefly with general features and terminology of oedaspine wing patterns, focussing on the Afrotropical fauna. The Afrotropical fauna generally can be divided into two subgroups, each characterised by a distinct type of banded wing pattern. One subgroup (the most widespread in the Afrotropical Region and the Old World) is exemplified by a wing pattern such as in Fig. 1 (but see also Figs 11–12). This pattern, here termed '*Oedaspis* type', is typically composed of a dark proximal area and five transverse and more or less slanted bands, generally connected to each other. These bands are named here from base to apex: sub-basal, discal, cubital, preapical and apical (Fig. 1). The

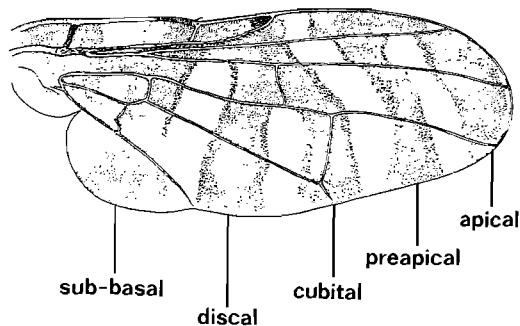


Fig. 1. *Oedaspis* wing, with terminology of dark bands.

cubital band in this subgroup runs from the pterostigma, through crossveins r-m and dm-cu, to the hind margin of the wing. *Oedaspis hyalibasis* sp. n. (Fig. 10) and *Oedoncus taenipalpis* (Fig. 26) belong to this subgroup, despite their peculiarities: the former species has a completely hyaline wing base, and the latter has a complete hyaline transverse band separating the sub-basal band from all others. *Oedaspis congoensis* sp. n. (Fig. 8), *O. montana* sp. n. (Fig. 13) and *O. reticulata* sp. n. (Figs 18–19) are exceptional in having a reticulate or reticulate-banded wing pattern, in which the bands are distorted or obscured by reticulation. Nevertheless, the main characteristics of the subgroup can also be detected in these species, although with difficulty in *O. reticulata*.

The second subgroup comprises the species here assigned to the *trapezoidalis* group of *Oedaspis*. The wing pattern of this subgroup (Figs 21–25), here termed '*trapezoidalis* type', differs from the *Oedaspis* type in having only four complete and more or less perpendicular bands (the fifth, apical, band is represented by two, often isolated, spots at the apices of veins R_{4+5} and M respectively) and in having crossveins r-m and dm-cu each in a different band, both bands separated by a more or less complete transverse hyaline band. *Oedaspis russa* (Fig. 20), with elements of both subgroups, represents a transition between the two subgroups. Conversely, *O. quinotata* (Munro) (Fig. 16) does not fit either of the subgroups and, by virtue of its unique wing pattern, either deserves a subgroup for itself or, perhaps, is not an oedaspine.

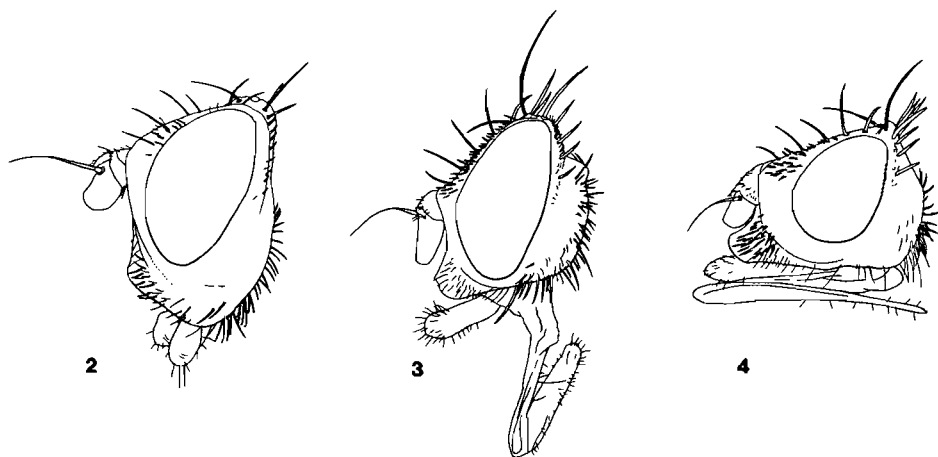
Most New World taxa are characterised by a still different type of wing pattern (here termed '*Cecidochares* type'), with generally fewer (3–4) dark bands, and a

complete hyaline band across the basal half of the wing, usually basad to the pterostigma (eg. Foote 1980). It should be stressed, however, that the above three terms referring to oedaspidine wing pattern types are used here for convenience only, and do not necessarily imply phylogenetic relationships.

This is probably the best place to mention that unlike some Palaearctic species of *Oedaspis*, in which there is marked sexual dimorphism in the wing pattern (Freidberg & Kugler 1989), this kind of dimorphism is almost unrecorded in the Afrotropical species (less conspicuous sexual dimorphism occurs, for example, in *O. reticulata* sp. n.). However, attention is drawn to this trait because several of the Afrotropical species are still known from one sex only.

A comprehensive study of the terminalia of the group was not undertaken, because most species were represented by few specimens. However, the male terminalia of seven species and female terminalia of ten species were dissected and illustrated, thus allowing some generalisations. Although both male and female terminalia offer good specific characters, there is much uniformity in the studied species. The male epandrium is oval, as in most Tephritinae, with the surstylus at most slightly prolonged (eg. in *O. reticulata* sp. n., Fig. 28). The distiphallus (Figs 42–48) is moderately sclerotised, with short vesica, and dorsally with a rather simple sclerotisation that is often reduced. The aculei are of two major types: arrow-like and serrate (eg. Fig. 55), or gradually tapered and smooth-edged (eg. Fig. 53). *Oedaspis russa* is the only species studied with the aculeus gradually tapered, but with a serrate edge (Fig. 52), however, the Palaearctic *O. trotteriana* Bezzi has the aculeus arrow-like but smooth-edged. No phylogenetic significance could be attributed to this division of aculeus types. The two spermathecae (Fig. 59), which are spherical or ovoid, varied little among the species, and therefore were not studied in detail.

As stated above, Oedaspidini are rare in collections. This study was based on a small number of specimens, mostly collected and reared by the authors during an



Figs 2–4. Head, lateral view. 2. *Oedaspis reducta* sp. n. (paratype); 2 dark, pointed genal bristles omitted (inserted directly above palpus). 3. *Oedoncus taenipalpis* Speiser. 4. *Xenodorella mira* Munro.

ongoing survey of the Afrotropical Tephritidae. It was augmented by material kindly loaned to us by the following institutions and curators, whom we gratefully acknowledge:

- BMNH – The Natural History Museum (formerly British Museum of Natural History), London, England (Dr I. M. White)
- CMP – Carnegie Museum, Pittsburgh, Pennsylvania, USA (Dr C. W. Young)
- CNRT – Centre National de Recherches de Tsimbazaza, Antananarivo, Madagascar (Dr Voara Randrianasolo)
- ETHZ – Eidgenössische Technische Hochschule, Zürich, Switzerland (Dr W. Sauter & Mr B. Merz)
- FSA – Faculte des Sciences Agronomique, Gembloux, Belgium (Dr A. Pauly)
- MNHP – Muséum National d'Histoire Naturelle, Paris, France (Dr L. Matile)
- MRAC – Musée Royal de l'Afrique Centrale, Tervuren, Belgium (Dr E. De Coninck)
- NCIP – National Collection of Insects, Pretoria, South Africa (Dr M. Mansell)
- NMSA – Natal Museum, Pietermaritzburg, South Africa (Dr J. G. H. Londt)
- TAU – Zoological Museum, Tel Aviv University, Tel Aviv, Israel
- USNM – National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA (Dr A. L. Norrbom)
- ZMUA – Zoologische Museum, Universiteit van Amsterdam, Amsterdam, The Netherlands (Dr B. v. Aarsten)
- ZMUC – Zoologisk Museum, Universitets Copenhagen, Copenhagen, Denmark (Dr L. Lyneborg)

TAXONOMY

Tribe Oedaspidini Hering

The group was diagnosed by Freidberg & Kugler (1989), but their statement that the exact number of genera is not known, still holds true. Recently, Allen Norrbom (personal communication) suggested that *Dithryca* Rondani should be included and, having priority over *Oedaspis*, the tribe should be renamed Dithrycini. This suggestion needs further study, which is beyond the scope of the present paper. However, the reader is advised to consult Hendel (1927*b*) for his tribe Ditrichini [sic], which includes genera that are similar and possibly closely related to *Dithryca*, such as *Noeeta* Robineau-Desvoidy and *Paracarphotricha* Hendel.

In view of the above-mentioned problem, any diagnosis of the tribe at this time would be incomplete and unstable. Nevertheless, a very brief diagnosis is given below, especially for those readers who are unfamiliar with the group. Exceptions, depicted from the Old World fauna only, are given in parentheses.

The following are the most important characters: generally heavy-bodied flies; frons and face broad; frontal stripe setose; proboscis usually very short (reduced) to normally capitate (long and geniculate in *Oedoncus* and *Xenodorella*); scutellum usually strongly and evenly convex and strongly shiny, although shine and convexity vary greatly (scutellum bilobed in some Afrotropical species of

Oedaspis); crossveins r-m and dm-cu usually approximated (distant in the *trapezoidalis* group of *Oedaspis*); wing pattern usually banded, lacking dots and streaks at basal third of wing (reticulate-banded or reticulate in some Afrotropical species of *Oedaspis*); epandrium oval; aculeus arrow-like and serrate or gradually tapered and smooth-edged (gradually tapered and serrate in *Oedaspis russa*, arrow-like and smooth-edged in *O. trotteriana*); usually stem-gall formers on Asteraceae. Although most of these characters are not entirely consistent, they can be used to correctly assign most species.

The following key separates the six genera that, according to the concepts presented in this paper, comprise the Oedaspidini of the Old World. The previously recognised genera *Embaspis* and *Tylaspis* are here considered synonyms of *Oedaspis* and therefore are not included in the key.

Key to Old World genera of Oedaspidini

- 1 Proboscis long, geniculate (Figs 3–4), distinctly longer than head 2
- Proboscis short, capitate, usually exceptionally small, distinctly shorter than head (Fig. 2) 3
- 2 Generally black species; head distinctly higher than long (Fig. 3); wing with blackish bands and complete transverse hyaline band between sub-basal and discal bands (Fig. 26) **Oedoncus** Speiser (1 sp., Afrotropical)
- Generally yellowish species with shiny black scutellum; head distinctly longer than high (Fig. 4); wing with yellowish bands and without complete hyaline band (Fig. 27) **Xenodorella** Munro (1 sp., Afrotropical)
- 3 Scutellum with 1 pair setae; R_{4+5} extensively setose **Ptiloedaspis** Bezzi (1 sp., Palaearctic)
- Scutellum with 2 pairs setae, if 1 pair then Afrotropical; R_{4+5} usually bare, if setose then usually with only a few setulae at node 4
- 4 Two frontal setae; first flagellomere pointed dorso-apically **Oedaspoides** Hendel (2 spp., Australian)
- Three or more frontal setae; first flagellomere usually rounded apically 5
- 5 Proboscis reduced in size (Fig. 2) **Oedaspis** Loew (35 spp., Palaearctic, Afrotropical, Oriental)
- Proboscis of the normal capitate size **Chrysotrypanea** Malloch (2 spp., Australian)

Oedaspis Loew

Oedaspis Loew, 1862: 46; Munro, 1947: 238 (taxonomic notes); Munro, 1952: 219 (comparison with *Embaspis*); Cogan & Munro, 1980: 540 (Afrotropical catalogue). Type species: *Trypeta multifasciata* Loew, 1850: 52, by designation of Rondani (1870: 9) [Coquillett (1910: 578) redundantly designated *Trypeta multifasciata* Loew as type species, apparently unaware of Rondani's designation].

Tylaspis Munro, 1935a: 31 (as subgenus of *Oedaspis*); Munro, 1939c: 154 (relationships; treated as genus); Munro, 1947: 239 (taxonomic notes); Cogan & Munro, 1980: 541 (Afrotropical catalogue). Type species: *Oedaspis maraisi* Munro, 1935a: 32, by original designation. **Syn. n.**

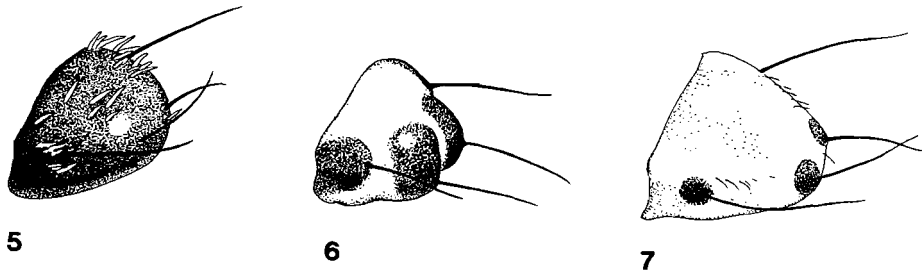
Munroedaspis Hering, 1940: 6 (as subgenus of *Oedaspis*); Munro, 1952: 218 (synonymy with

Tylaspis); Cogan & Munro, 1980: 541 (Afrotropical catalogue). Type species: *Oedaspis trapezoidalis* Munro, 1938: 167, by original designation. **Syn. n.**
Embaspis Munro, 1952: 219; Cogan & Munro, 1980: 540 (Afrotropical catalogue). Type species: *Embaspis pauliani* Munro, 1952: 220, by original designation and monotypy. **Syn. n.**

In the early literature (eg. Hendel 1927b), *Oedaspis* is a genus of Trypetini, characterised by a shiny, strongly convex scutellum that is black or black spotted, a wide frons and frontofacial angle and a typically and extensively banded wing, in which the bands form letters (eg. 'H', 'T', 'N', 'V', 'X', 'Y'), and crossveins r-m and dm-cu are strongly approximated. Prior to this study the genus comprised 19 species: 17 Palaearctic, one Afrotropical and one Oriental. The Palaearctic species were arranged in four subgenera, namely *Bulgaroedaspis* Drensky, 1943; *Dichoedaspis* Hendel, 1927b; *Melanoedaspis* Hendel, 1927b; *Oedaspis* s. str. (see Foote 1984). In the Afrotropical Region species have been variously described under *Oedaspis*, *Embaspis* and *Tylaspis* (the latter two nominal genera confined to the Afrotropical Region), but all species except one eventually were placed under *Tylaspis* or *Embaspis* (Cogan & Munro 1980). The one exception, *O. auriella*, was described in *Oedaspis* (Munro 1939a) and subsequently (Cogan & Munro 1980) retained under this combination. However, *O. auriella* is transferred below from *Oedaspis* (Oedaspidini) to *Oedosphenella* Frey (Tephritini). All other species included under *Embaspis*, *Oedaspis* and *Tylaspis*, as well as those under *Ptiloedaspis*, *Chrysotrypanea* and *Oedaspoides* probably form a monophyletic group that may eventually be placed in a wider *Oedaspis*. Nonetheless they form a very heterogeneous cluster in which species generally have good autapomorphies and are quite distinct from each other, so much so that for a total of 30 species, nine genus-group names have been suggested. Some of these so-called genera and subgenera may indeed represent monophyletic lineages, but this apparently is not always the case. Moreover, with the addition of the nine new species described below, weak distinctions that existed between some of these genus-group taxa become insignificant or disappear altogether. Summarising these observations, we feel that all these taxa should indeed be lumped under *Oedaspis*, and that most, if not all, previously mentioned genera and subgenera can at best be treated as species groups. However, we are now confident enough to implement this recommendation only for the Afrotropical genera *Embaspis* and *Tylaspis*.

Embaspis is restricted to Madagascar and is the only representative of the tribe there. *Embaspis pauliani*, the type species (not properly studied by us), is said by Munro (1952) to have a dorsally flattened or slightly convex scutellum, and this is practically the only character suggested by Munro to distinguish *Embaspis* from *Oedaspis*. However, *Embaspis inflata* Munro has a strongly convex, *Oedaspis*-like scutellum (Fig. 5), and *O. nyx* sp. n., a third Malagasy species, has a moderately convex scutellum and thus represents an intermediate condition between the two other Malagasy species, completing a cline between typical *Oedaspis* and typical *Embaspis*.

Tylaspis is restricted to mainland Africa. It contains species with a dorsally flattened (occasionally somewhat convex), trapezoidal or more or less bilobed scutellum, which is predominantly yellow with black spots (especially at the bases of the setae). Thus, with regard to scutellum shape, *Tylaspis* intergrades into



Figs 5–7. Scutellum, left anterolateral view. 5. *Oedaspis inflata* (Munro). 6. *O. russa* Munro (paratype). 7. *O. serrata* sp. n. (holotype).

Oedaspis via *Embaspis*. Regarding other characters, such as head shape (frontofacial angle, frons width) and wing pattern, some species of *Tylaspis* closely resemble the Palaearctic members of *Oedaspis* (which almost invariably have an extremely wide frontofacial angle and frons and an *Oedaspis*-type wing pattern), whereas others are different, again showing intergradation between the two genera. For these reasons *Embaspis* and *Tylaspis* are here synonymised under *Oedaspis*. An undesirable consequence of this action is that this already heterogeneous genus becomes even more heterogeneous and more difficult to diagnose unambiguously. The combination of a reduced proboscis, 'Oedaspis' or 'trapezoidalis' wing pattern, and certain parts of the scutellum and/or abdomen shiny should correctly diagnose at least most species of *Oedaspis*. As stated above, this difficulty should be addressed together with others in a more comprehensive revision.

The descriptions of the new species below are as detailed and comparative as possible, whereas the other species are treated briefly. While describing the new species, special care was taken to obtain measurements of the frons, and the female T5, T6 and syntergosternite 7. The width of the frons at the vertex and at the level of the lunule were measured and compared with the width of the head. The results were surprisingly uniform, with a frons width at vertex:head width ratio in eight species varying between 0,49–0,54 (in *O. nyx* sp. n. 0,42), and with the frons practically parallel-sided, except in *O. nyx* and *O. reticulata*, where it is widened anterad by 5–15%, and in *O. hyalibasis* sp. n., where it is narrowed anterad by 20%. Many Palaearctic species of *Oedaspis* have the frontal width at vertex:head width ratio 0,55 or greater, and the frons is widened anterad by 20% (Freidberg, unpublished observations). Hence, measurements taken from a sample of Afrotropical and Palaearctic species appear to form a cline. T6 is almost always distinctly shorter than T5 (usually 0,6–0,75), but in *O. congoensis* sp. n. T6 equals T5, in *O. inflata* T6 is distinctly longer than T5, and in *O. reticulata* sp. n. the ratio varies from 0,6–1,1. The syntergosternal measure also varies relatively little among these species, ranging between 1,5 (in *O. nyx*) to 3,0 (in the holotype of *O. plucheivora* sp. n.), but being 2,0–2,5 in most species, which is also the prevailing value in the Palaearctic species. Because of distortion, however, this measure should be considered with caution, especially when only a single or just a few females are available.

The following key treats all 17 Afrotropical species of *Oedaspis*, including those

previously described under *Embaspis* and *Tylaspis*. Couplets dealing with species of the *trapezoidalis* group are primarily designed for females, because the concept of these species is based on females only. Characters of males tentatively associated with these females were nevertheless included (in brackets) at the end of each couplet.

The species are treated in alphabetical order, except those of the *trapezoidalis* group, which are treated after all others.

Key to Afrotropical species of *Oedaspis*

- 1 Scutellum uniformly black or blackish, rounded, with apex sometimes pointed, dorsally slightly to strongly convex, not emarginate and without any trace of lobes (Fig. 5); wing pattern banded 2
- Scutellum at least partly yellow, with 1–2 pairs black spots, in which the setae are inserted, usually trapezoidal (Fig. 7) or with apex more or less distinctly emarginate (Fig. 6), usually dorsally flat, but occasionally rounded and convex; if convex and scutellar spots indistinct, then wing pattern reticulate or reticulate-banded 5
- 2 Scutellum with 1 pair setae; body and wing pattern black; base of wing hyaline (Fig. 10); small species (wing length 3,15 mm) (Ethiopia) *hyalibasis* sp. n.
- Scutellum with 2 pairs setae; coloration of body and wing pattern variable; base of wing dark; larger species (wing length over 4 mm) (Madagascar) ... 3
- 3 Scutellum strongly convex and shiny (Fig. 5); thorax with coarse white setulae; wing (Fig. 11) with small, indistinct hyaline spot at apex of vein R_{4+5} (Madagascar) *inflata* (Munro)
- Scutellum moderately convex and at most subshiny; thoracic setulae variable; wing (Figs 14–15) with large, distinct, hyaline spot at apex of vein R_{4+5} 4
- 4 Wing with squarish hyaline spot in cell r_1 , touching apex of pterostigma, well separated from vertical transverse hyaline band beyond crossvein dm-cu, so that clear 'X' is formed in middle of wing (Fig. 14); thoracic setulae blackish (Madagascar) *nyx* sp. n.
- Squarish hyaline spot in cell r_1 as a continuation to oblique transverse hyaline band, so that clear 'X' is not formed in middle of wing (Fig. 15); thoracic setulae white (Madagascar) *pauliani* (Munro)
- 5 Wing pattern reticulate or reticulate-banded, almost entirely brownish or blackish, with small, isolated or touching, hyaline spots that sometimes form chains of 2 or 3 spots (Figs 8, 13, 18–19); scutellum not bilobed 6
- Wing pattern clearly banded, usually with bands paler and bicolorous, and without such spots (Figs 9, 12, 16–17, 20–25); scutellum usually bilobed 8
- 6 Wing pattern reticulate (Figs 18–19); posterior part of scutum, scutellum and pleura predominantly with whitish setulae (Kenya) *reticulata* sp. n.
- Wing pattern reticulate-banded (Figs 8, 13); all thoracic setulae blackish .. 7

- 7 Scutellum strongly convex, dorsally mostly blackish, except yellow margin; both apical and basal scutellar setae inserted in black spots; cell r_1 with 3 hyaline spots; hyaline spots at apex of cells r_{2+3} and r_{4+5} large, approximated or united; pterostigma usually entirely black; distance between crossveins r-m and dm-cu along vein M about 1,75 times as long as crossvein r-m (Fig. 8) (Zaire) **congoensis** sp. n.
- Scutellum almost flat, dorsally almost entirely brownish yellow; only apical scutellar seta inserted in black spot; cell r_1 with 2 hyaline spots; hyaline spots at apex of cells r_{2+3} and r_{4+5} small, not approximated; pterostigma with hyaline spot at base; distance between crossveins r-m and dm-cu along vein M subequal to length of crossvein r-m (Fig. 13) (Kenya) **montana** sp. n.
- 8 Wing pattern comprising a complete dark 'V' from pterostigma through hind margin and crossvein dm-cu to apex of cell r_1 , and an isolated apical band (Fig. 16) (Kenya) **quinotata** (Munro)
- Wing pattern different, not comprising such a 'V' 9
- 9 Wing with more or less complete, isolated, transverse, hyaline band between crossveins r-m and dm-cu that does not extend into cell m (Figs 21–25); body usually entirely yellow or orange, except black spots around bases of some scutal setae and on scutellum, and syntergosternite 7 occasionally black; with slight or no microtomentum; scutellum not or barely emarginate (Fig. 7) (*trapezoidalis* group) 10
- Wing without discrete transverse hyaline band between crossveins r-m and dm-cu (Figs 9, 12, 20); if such band present, then it is part of a larger hyaline area that also extends into cell m (Fig. 17); body, especially thorax, with darker and larger markings and usually with rather heavy microtomentum; if with slight microtomentum, then scutellum strongly emarginate (Fig. 6) 14
- 10 Katepisternal seta present and easily distinguishable from other setulae; aculeus not or finely serrate 11
- Katepisternal seta absent, or at least indistinguishable from other setulae; aculeus finely or coarsely serrate 13
- 11 Wing bands more slanted, with discal band reaching well beyond pterostigma in cell r_1 and containing hyaline spot there (Fig. 25); distance between basal and apical spots on scutellum 3–4 times larger than diameter of apical spot (Cameroon) Undescribed sp.
- Wing bands more perpendicular, with discal band barely extending in cell r_1 distal to pterostigma and not containing hyaline spot (Figs 21–24); distance between basal and apical spots on scutellum variable 12
- 12 Sub-basal band broadly united with dark basal area of wing; entire basal third of wing with only small hyaline spot at centre of cell bm (Fig. 22); aculeus (Fig. 54) arrow-like, serrate; syntergosternite 7 black. [Distiphallus

- (Fig. 44) with reduced sclerotisation restricted to base.] (South Africa, ?Zambia) **plucheivora** sp. n.
- Sub-basal band and dark basal area of wing widely separated by hyaline band from vein C to vein CuA, which is interrupted along cell br (Fig. 21); aculeus (Fig. 53) gradually tapered, not arrowlike or serrate; syntergosternite 7 yellow, except tip blackish. [Distiphallus (Fig. 43) with extensive sclerotisation.] (Tanzania, ?Malawi) **amani** sp. n.
- 13 Aculeus (Fig. 55) with coarse serration; distance between apical black spots on scutellum 0,5 times diameter of spot (Fig. 7); veins R_{4+5} and M divergent apically (Fig. 23). [Distiphallus (Fig. 45) extensively sclerotised.] (Kenya, ?Tanzania) **serrata** sp. n.
- Aculeus (Fig. 56) with fine serration; distance between apical black spots on scutellum 1,0–1,5 times diameter of spot; veins R_{4+5} and M parallel (Fig. 24). [Distiphallus (Fig. 46) with reduced sclerotisation] (Nigeria, Cameroon, Gabon, Zaïre, ?Kenya, Angola) **trapezoidalis** Munro
- 14 Wing with apex (at least in cell r_{4+5}) dark and with incomplete transverse hyaline band beyond crossvein dm-cu, extending from vein R_{2+3} to hind margin (Figs 9, 12); scutellum distinctly bilobed 15
- Wing with apex hyaline and with complete transverse hyaline band or area beyond crossvein dm-cu (Figs 17, 20); scutellum variable 16
- 15 Dark pattern of wing more extensive, covering almost entire basal 0,3 of wing and entire apical 0,5 of cell m (cell m occasionally with preapical hyaline streak), and with bands distinctly wider than hyaline gaps (Fig. 9) (South Africa) **crocea** Munro
- Dark pattern of wing less extensive, with large hyaline areas at basal 0,3 of wing and at apex of cell m, and with bands generally narrower than hyaline gaps (Fig. 12) (South Africa) **maraisi** Munro
- 16 Wing (Fig. 20) predominantly dark, with 3 dark wide bands or areas transversely separated by narrow hyaline bands; scutellum distinctly bilobed (Fig. 6) (South Africa) **rusa** Munro
- Wing (Fig. 17) predominantly hyaline, with dark bands rather narrow and interrupted, forming more or less legible 'IXY'; scutellum weakly bilobed (Kenya) **reducta** sp. n.

Oedaspis congoensis sp. n.

Fig. 8

Diagnosis: ♀: This species and *O. montana* sp. n. are the only Afrotropical congeners with a reticulate-banded, blackish, wing pattern, in which the bands are at most indistinctly discernible. The two species are closely related but easily distinguished based on characters of the scutellum and wing. The scutellum is

convex and predominantly blackish in *congoensis*, flat and predominantly yellow in *montana*. The wing, which is more elongate and with shorter pterostigma in *congoensis*, also differs in the number, size and location of hyaline spots.

Description (♀):

Head: Coloration: Frons yellowish to brownish, darker centrally, ocellar spot and vertical plates blackish, covered by gray microtomentum; remaining parts of head yellow with sparse whitish microtomentum; antenna yellow; proboscis and palpus yellowish; setulae mostly brownish; major setae blackish. Structure: Frons parallel-sided; frons width at vertex:head width ratio 0,53; frontofacial angle less than a right angle, but face somewhat sunken; face distinctly concave, with distinct carina dorsally, especially between antennae; ventral facial margin rather strongly protrudent; gena 0,51 height of eye in holotype, 0,38 in paratype; 1st flagellomere oval, about 1,5 times as long as wide; arista bare; frontal setae 3–6, anterior one usually shorter.

Thorax: Scutum predominantly blackish, anterior and lateral margins, including postpronotum and suture, yellow, covered entirely by yellowish microtomentum; with short blackish setulae and black setae; pleura predominantly yellow, with brown or blackish areas or spots and yellow microtomentum; vestiture as on scutum. Scutellum rounded-triangular, rather strongly convex and predominantly blackish dorsally, with more or less broad yellow margin and with blackish area extended to form small but distinct black spots at base of basal and apical scutellar setae, with yellowish microtomentum restricted to dark area. Subscutellum and mediotergite blackish with distinct microtomentum. Dorsocentral setae aligned with anterior supra-alar setae; 1–2 anepisternal setae; 1 katepisternal seta. Calypteres whitish, dorsal calypter with brownish margin; halter yellow, knob brownish.

Legs: Brownish yellow; setulae mostly blackish.

Wing (Fig. 8): Length: 6–7,2 mm. Wing length to width ratio 2,53. Pattern dark brown, extensively reticulate-banded, but bands difficult to discern, with hyaline areas mostly restricted to small spots either isolated or touching and forming chains of 2 or 3 spots; base of wing almost entirely dark brown; alula brownish; row of subhyaline spots extends from vein C across middle of cell c to base of cell a, narrowly interrupted in cell br; cell c with additional hyaline spot in basal half; hyaline spots are: 3 spots in cell r_1 : 1 touching apex of pterostigma, 1 slightly before apex of cell and 1 midway between first two; 2 spots in distal half of cell r_{2+3} , the proximal one touching or almost touching central spot in cell r_1 , distal one almost at apex of cell, between vein R_{4+5} and vein C; rounded spot in distal part of cell br and another in base of cell r_{4+5} , both situated symmetrically with respect to crossvein r-m; spot in cell br touching or almost touching similar spot in cell dm; proximal spot in cell r_{4+5} almost touching proximal spot in cell r_{2+3} ; spot at apex of cell r_{4+5} large, touching or almost touching spot at apex of cell r_{2+3} but not reaching vein M; cell dm with additional 1 or 2 small spots, aligned between crossveins r-m and dm-cu, one touching vein M, the other vein CuA_1 but one of them occasionally missing; cell m with 3 small hyaline spots; cell cua_1 with large hyaline spot at basal third and small hyaline spot preapically at

hind margin. Vein R_{4+5} dorsally and ventrally with 3–4 setulae at basal section. Pterostigmal ratio 2,3.

Abdomen: Oval, reddish brown, shiny, with sparse microtomentum and blackish setulae and setae. Syntergosternite 7 dorsally and apically blackish, basoventrally reddish brown, shiny; syntergosternal measure 2. Aculeus arrow-like, serrate, partly exposed in paratype, but not dissected.

Material examined: Holotype ♀, ZAÏRE: P.N.A., Secteur Tshiaberimu, Kirungu (lieu-dit), 2720 m, 11.iii.1954, P. Vanschuytbroeck & H. Synave 7732-34. Paratype ♀: P.N.A., Secteur Tshiaberimu, Vicole (lieu-dit), riv. Kyambula, 2750 m, 18.iv.1955, P. Vanschuytbroeck & R. Fonteyn 12.947. The holotype is double mounted (minute nadel in *Polyporus* block), is in fair condition, and is deposited in MRAC together with the paratype.

Etymology: Named for the country of origin, formerly known as the Belgium Congo.

Oedaspis crocea Munro

Fig. 9

Oedaspis (Tylaspis) crocea Munro, 1939b: 151.

Tylaspis crocea: Cogan & Munro, 1980: 541 (Afrotropical catalogue).

We examined the ♂ holotype from South Africa labelled: Cape Province, Matjesfontein, 25–30.x.1928, R. E. Turner, and the ♀ allotype, same collecting data as holotype, except 1–6.xi.1928 (NCIP), the only known specimens. The original description is adequate. In the wing pattern and shape of scutellum this species is closely related to *O. maraisi*, another South African species. Both species also have coarse whitish setulae on the ventral surface of the scutellum, an unusual character that is more obvious in *O. crocea*.

Oedaspis hyalibasis sp. n.

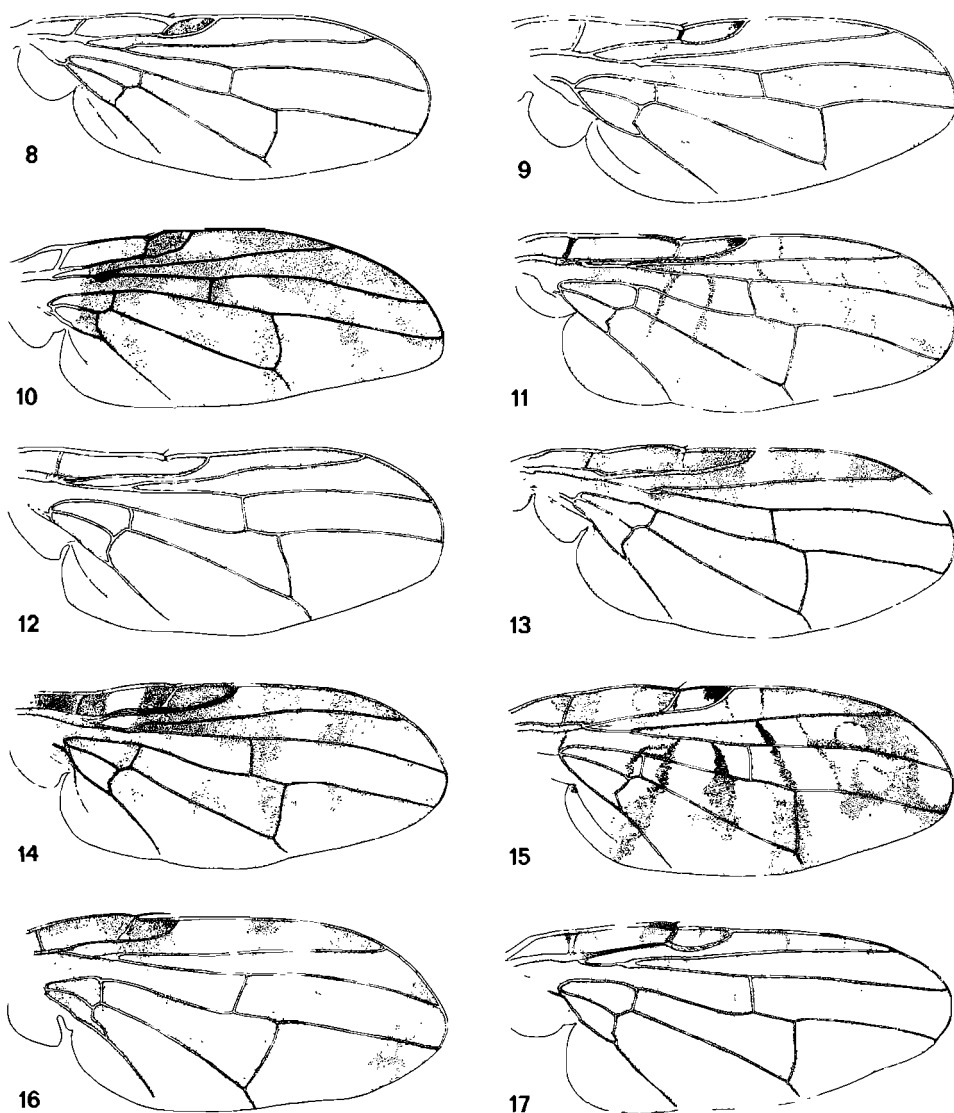
Fig. 10

Diagnosis: ♂ : This species is easily distinguished from all other Afrotropical congeners by a combination of the following characters: 1 pair scutellar setae, wing pattern black with basal 0,2 of wing hyaline, and small size (wing length 3,15 mm). The single pair of scutellar setae actually distinguishes this species from all other Oedaspidini, with the exception of the Palearctic *Ptiloedaspis tavaresiana*. *O. hyalibasis* is not placed in *Ptiloedaspis* because it does not share with *P. tavaresiana* (the only included species) the other apomorphic characters of *Ptiloedaspis*, such as the extensively setose vein R_{4+5} and dark band over vein CuA_1 . In addition, we suspect that *Ptiloedaspis* will eventually become a junior synonym of *Oedaspis* (see below).

Description (♂):

Head: Coloration: Frons yellow, with irregular blackish area that occupies most of posterior half and extends anterad in 3 converging vittae that almost reach lunule; ocellar triangle black; anterior 0,5 of fronto-orbital plate, parafacial, face and gena (to an oblique line that extends from about genal seta to posteroventral

0,3 of eye) white; occiput predominantly black, with slender whitish stripe along posterodorsal 0,6 of eye; scape brown, pedicel blackish brown; 1st flagellomere and arista, except the yellow base of the latter, black; palpus yellow, proboscis brownish. Black and blackish parts of head sparsely but distinctly gray microtomentose; remaining areas subshiny, without apparent microtomentum;



Figs 8-17. Wing. 8. *Oedaspis congoensis* sp. n. (holotype). 9. *O. crocea* Munro (paratype). 10. *O. hyalibasis* sp. n. (holotype). 11. *O. inflata* (Munro) (holotype). 12. *O. maraisi* Munro (paratype). 13. *O. montana* sp. n. (holotype). 14. *O. nyx* sp. n. (holotype). 15. *O. pauliani* (Munro) (after Munro 1952). 16. *O. quinotata* (Munro) (after Munro 1939d). 17. *O. reducta* sp. n. (paratype). (Wings drawn from pinned specimens and therefore not entirely flattened.)

setulae on dorsal 0,5 of head and on palpus blackish or black, setulae on ventral 0,5 of head whitish; mesofrons bare; major setae including postoculars black. Structure: Frons at vertex 0,5, and at level of lunule 0,41 as wide as head; frontofacial angle about a right angle, rounded; face slightly concave, ventral facial margin slightly protrudent; antenna about 0,8 height of face; 1st flagellomere about 1,5 times as long as wide, generally oval, but slightly narrowed at apical 0,5; arista with short but distinct rays (hairs); ocellar seta about as long as anterior orbital seta; frontal setae 4-5, alternating long and short setae.

Thorax: Entirely shiny black, covered by fine, gray microtomentum; setulae and setae black. Scutellum rounded, with apex indistinctly pointed, moderately convex dorsally, with only 1 pair setae inserted at middle of lateral margin. Dorsocentral setae aligned with anterior supra-alar setae; 1 anepisternal seta; 1 katepisternal seta. Calypteres white; halter yellow.

Legs: Coxae, trochanters and femora blackish, tibiae brownish, darker basally, more extensively so on hind tibia; tarsi yellow; setulae and setae blackish.

Wing (Fig. 10): Length: 3,15 mm. Basal 0,2 yellowish hyaline; remainder with black pattern comprising 5 complete and connected bands and 4 hyaline posterior incisions; black bands united along an almost entirely black anterior margin of wing which, in the basal part, reaches vein M and, slightly beyond crossvein r-m, reaches vein R_{4+5} . Extreme tip of pterostigma and an area in cell r_1 immediately beyond pterostigma subhyaline. Sub-basal and discal bands and 2 basal hyaline incisions perpendicular; the remaining bands and incisions oblique. Vein R_{2+3} straight, short; 3rd costal section (between veins R_1 and R_{2+3}) 1,1-1,2 times as long as 4th section (3rd costal section relatively much longer in all other studied species); veins R_{4+5} and M generally parallel, but vein R_{4+5} slightly wavy, especially apically, whereas vein M straight, reaching wing tip; crossvein r-m situated slightly beyond middle of cell dm; vein R_{4+5} dorsally with 1-2 setulae at node. Pterostigmal ratio 2.

Abdomen: Short and wide, entirely black, subshiny, with fine gray microtomentum and black setulae and setae.

Material examined: Holotype ♂, ETHIOPIA: Debre Libanos, 12.xii.1989, A. Freidberg & F. Kaplan. The holotype is double mounted (minute nadel in plastic block), is in fair condition (lacking the 3 left legs), and is deposited in TAU.

Etymology: Named for the hyaline base of the wing.

Oedaspis inflata (Munro), **comb. n.**

Figs 5, 11

Embaspis inflata Munro, 1953: 547; Cogan & Munro, 1980: 540 (Afrotropical catalogue).

We studied the ♀ holotype from Madagascar labelled: Inst. Scient. Madagascar, Imeritsiatosika pres Arivonimamo, Elev. du 2.v.[19]52, No. G.341., Eclos 6.v.[19]52, Obtenu de galle de tige de *Stenocline* sp., (A.R.) [R. Paulian per Munro, 1953] (NCIP), as well as 2 ♂ labelled: MADAGASCAR S.: Fort Dauphin (Taolanaro), 18-23.iv.1991, A. Freidberg and Fini Kaplan, ex stem gall

Psiadia angustifolia, 16.v.1991 (TAU). Munro's (1953) original description is adequate, and the males seem to be conspecific with the female despite the following differences: setae in males more lightly colored than in female, especially posterior orbital, anepisternal, katapisternal and posteroventral row on fore femur, which are white not black or blackish; abdomen in male predominantly dull and blackish, with hind margin of terga yellow, not ferruginous and subshiny as in female; hyaline band beyond pterostigma and crossveins complete, reaching hind margin of wing. More specimens of both sexes are needed to ascertain that these differences merely represent intra- and not interspecific variation.

This species is similar to some Palaearctic species (eg. *Oedaspis villeneuvei* Bezzi), especially in wing pattern (Fig. 11) and characters of the scutellum (Fig. 5). The strongly convex scutellum is in contradiction to Munro's (1952) concept of *Embaspis*, which was said to have a slightly convex or an almost flattened scutellum. T6 is about 1,5 times as long as T5. The host plants are *Stenocline* sp. (Inuleae) and *Psiadia angustifolia* (H. Humb.) (Astereae).

Oedaspis maraisi Munro

Figs 12, 49

Oedaspis (*Tylaspis*) *maraisi* Munro, 1935a: 32 (original description and biology).

Tylaspis maraisi: Munro, 1952: 219 (key); Cogan & Munro, 1980: 541 (Afrotropical catalogue).

We studied 3 ♂ 8 ♀ paratypes from South Africa labelled: Middelburg, Cape, x.1933, M. 394, S. J. S. Marais (NCIP, NMSA, TAU). It should be noted that only one paratype bears a single acrostichal seta, whereas the others have none, and that the scutellum bears coarse whitish setulae on its ventral surface. These unusual characters were not mentioned by Munro (1935a), but otherwise his description, including the illustration of the scutellum, is adequate. The aculeus (Fig. 49) is of the arrow-like type, with coarse serration. Munro (1935a) reared this species from spherical stem galls on *Othonna pallens* De Candolle (Senecioneae).

Oedaspis montana sp. n.

Fig. 13

Diagnosis: ♀: This species and *O. congoensis* sp. n. are the only Afrotropical congeners with a reticulate-banded, blackish, wing pattern in which the bands are at most indistinctly discernible. The two species are closely related but easily distinguished based on characters of the scutellum and wing. The scutellum is flat and predominantly yellow in *montana*, convex and predominantly blackish in *congoensis*. The wing, which in *montana* is more elongate and has a shorter pterostigma than in *congoensis*, also differs in the number, size and location of hyaline spots.

Description (♀):

Head: Coloration: Frons yellowish to brownish; face whitish, partly due to microtomentum; parafacial, gena and occiput yellowish, with whitish

microtomentum; scape and pedicel yellow (remainder of antenna missing); proboscis and palpus yellowish; setulae mostly brownish; major setae blackish, postocellar, postvertical and postoculars brownish yellow. Structure: Frons parallel-sided; frons width at vertex:head width ratio 0,52; frontofacial angle almost a right angle, but face somewhat sunken; 4–5 frontal setae, anterior one shorter; dorsal 0,6 of face with distinct median carina and antennal groove laterally, ventral 0,3 centrally flat; ventral facial margin not protrudent; gena 0,38 height of eye.

Thorax: Ground color brownish yellow with irregular dark brown areas on mesonotum, covered by slight, yellowish microtomentum; with long and dense blackish setulae and blackish setae. Pleural coloration and vestiture as on scutum but setulae sparser. Dorsocentral setae aligned with anterior supra-alar setae; 1 anepisternal seta; 1 katapisternal seta. Scutellum brownish yellow, with small black spot at base of apical scutellar seta only; trapezoidal, dorsally almost entirely flat, barely convex. Subscutellum and mediotergite brownish with distinct microtomentum. Calypteres whitish, dorsal calypter with brownish margin; halter yellow.

Legs: Brownish yellow; setulae mostly blackish.

Wing (Fig. 13): Length: 6,1 mm. Wing length to width ratio 2,22. Pattern dark brown, extensive, reticulate-banded, with hyaline areas mostly restricted to small spots either isolated or touching and forming chains of 2 or 3 spots; base of wing almost entirely dark brown; alula brownish gray; subhyaline band extends from vein C across middle of cell c to base of cell a. Hyaline spots are: small spot at base of pterostigma; 2 squarish spots in cell r_1 , one touching apex of pterostigma, the other halfway between pterostigma and apex of cell; 2 or 3 spots in distal half of cell r_{2+3} , the proximal one touching or almost touching the distal spot in cell r_1 , the distal one almost at apex of cell, between vein R_{4+5} and vein C, the middle one missing on right wing; a rounded spot in distal part of cell br and another at base of cell r_{4+5} , both situated symmetrically with respect to crossvein r-m; the spot in cell br touching a similar but smaller spot in cell dm, the spot in cell r_{4+5} touching or almost touching the proximal spot in cell r_{2+3} ; a small spot at apex of cell r_{4+5} about 0,3 width of cell; cell dm with another spot almost aligned with crossvein r-m, touching a similar spot in cell cua_1 ; cell m with 2 spots extending from hind margin almost to vein M; a row of 3 spots extends from vein CuA_1 across basal 0,4 of cell cua_1 and vein A_1 almost to hind margin. Vein R_{4+5} bare. Pterostigmal ratio 3.

Abdomen: Oval, dark brown to black, subshiny, with sparse microtomentum and blackish setulae and setae. Syntergosternite 7 dorsally blackish, ventrally brownish, shiny; syntergosternal measure 2.

Material examined: Holotype ♀, KENYA: Mount Kenya, 1800 m, 29.iii.1973, J. Hourens. The holotype is pinned directly, is in fair condition (antennae missing) and is deposited in ZMUA.

Etymology: Named for the montane habitat, where it was discovered.

Oedaspis nyx sp. n.

Fig. 14

Diagnosis: ♀: This species is distinguished from all other congeners by its unique wing pattern, comprising the letters 'Y', 'X' and 'N', black and moderately convex scutellum, and large size (wing longer than 6 mm).

Description (♀):

Head: Coloration: Frons reddish yellow; ocellar spot blackish, remaining parts predominantly yellow, but dorsal 0,5 of occiput mostly dark brown; microtomentum whitish, fine, best observable on face, parafacial, 1st flagellomere, palpus and occiput, but ventral facial margin shiny; setulae and setae dark brown or blackish, but some setulae on mesofrons paler. Structure: Frons at vertex 0,42, at level of lunule 0,46 as wide as head; lunule with distinct carina between antennae; face distinctly concave, with ventral facial margin distinctly protrudent; frontofacial angle about a right angle; antenna about 0,8 times as long as face; 1st flagellomere oval, about 1,5 times as long as wide; arista with very short rays (hairs). Chaetotaxy: 1 orbital seta, 3–5 frontal setae; all setae long and thin.

Thorax: Entirely dark brown to black, subshiny and covered by slight, yellowish microtomentum, this generally more noticeable laterally; with dense, long and fine, predominantly blackish setulae (those on proepisternum and prosternum yellowish) and long, thin, blackish setae; dorsocentral setae aligned with anterior supra-alar setae; 1–2 anepisternal setae; 1 katepisternal seta. Scutellum rounded, with apex pointed, moderately convex dorsally. Calypteres brownish at margins, paler otherwise; halter predominantly yellow, with distinct brown areas on base and knob.

Legs: Coxae, femora and hind tibia predominantly brown to blackish, other parts yellow, although fore and mid tibiae centrally brownish; setulae and setae blackish, long.

Wing (Fig. 14): Length: 6,25 mm. Pattern blackish; basal 0,2 of wing blackish except alula; this blackish area connected along cell cup to oblique sub-basal band which in turn is connected at pterostigma and adjacent cells to a distinct, legible 'X', comprising discal and cubital bands, the centre of which lies on crossvein r-m; beyond this 'X' is a transverse hyaline band that, on left wing, is narrowly interrupted in cell r_1 ; remaining distal part (about 0,25–0,3) of wing almost entirely blackish, with 2 hyaline spots: one at end of vein R_{4+5} and another in cell m. Longitudinal veins somewhat wavy; vein R_{4+5} dorsally densely setose on and near node, thence sparsely setose on both sections. Pterostigmal ratio 3.

Abdomen: Coloration and vestiture (microtomentum, setulae and setae) as on thorax, but microtomentum sparser, and abdomen more shiny. Syntergosternite 7 blackish; syntergosternal measure 1.5.

Material examined: Holotype ♀, MADAGASCAR: route d'Ambositra a Ambohimanga du Sud, km 39, 1350 m, 6/11.xi.1963, P. Viette. The holotype is pinned directly, is in good condition (left antenna and tip of left wing missing) and is deposited in MNHP.

Etymology: The name *nyx* is an anagram of the letters, 'Y', 'X', 'N', that comprise the wing pattern.

Oedaspis pauliani (Munro), **comb. n.**

Fig. 15

Embaspis pauliani Munro, 1952: 220; Munro, 1953: 547 (collecting data and host records); Cogan & Munro, 1980: 540 (Afrotropical catalogue).

This species is known from Madagascar only. The original description (Munro 1952) is based on three specimens, holotype ♀, allotype ♂ and paratype ♀ recorded as follows: MADAGASCAR: 'Alasora, pres Tananarive. Obtenu de galle de tige d'*Helichrysum bojerianum* D.C. Elev. du IX.[19]50, eclos le 2.X.[19]50, n° G 122. R. Paulian coll.' Later, Munro (1953) recorded two additional specimens: '1♂, 1♀: Tananarive-Tsimbazaza; galle de *Stenocline incana* [Bak.], IX.1949, R. P[aulian].' There are no further records.

During a recent visit to the island, we briefly examined the female recorded by Munro in 1953 (deposited in CNRT) but could not borrow the specimen for a more detailed study, nor could we trace any other specimen. Hence we cannot further comment on this species. The recorded hosts belong to the tribe Inuleae.

Oedaspis quinotata (Munro), **comb. n.**

Fig. 16

Tylaspis quinotata Munro, 1939d: 5; Cogan & Munro, 1980: 541 (Afrotropical catalogue).

We have not located the holotype of this species (♂, KENYA: Chyulu Hills, 3500 ft, iv.1938, Coryndon Museum Expedition), which is the only recorded specimen, nor have we seen any other specimens. From the original description it appears to have a combination of unusual wing characters for an oedaspidine (Fig. 16): a peculiar wing pattern, comprising 5 diagonal bands, of which the 2nd and 4th form a complete 'V', costal spine as long as pterostigma (much shorter in all Old World species), lobe of cell cup long, almost as long as in typical ceratitines, and not short as in all other Afrotropical oedaspidines. The striated scutum is also a character peculiar to this species. In view of these characters, it is especially important to find the holotype and/or collect additional specimens and clarify the systematic position of the species.

Oedaspis reducta sp. n.

Figs 2, 17, 50

Diagnosis: This species differs from all other congeners by its wing pattern, which is the most reduced among the Afrotropical species and comprises bands and spots in the form of the letters 'I', 'X' and 'Y'.

Description (♀):

Head (Fig. 2): Coloration: Frons yellowish to brownish, paler on fronto-orbital plate and around ocelli, partly due to microtomentum; area between ocelli blackish; lunule and face whitish; parafacial, gena and occiput yellowish, the

latter with blackish markings; antenna yellow, arista brownish; proboscis and palpus yellowish; all parts covered by whitish microtomentum. Most setulae, including the few on anterior part of frons whitish or yellowish; some setulae, especially anterior to genal seta, on antenna and palpus brownish or blackish; most major setae dark brown; posterior orbital often paler than anterior orbital, outer vertical and postoculars whitish, the latter row including a few dark setulae. Structure: Head shape and chaetotaxy as in Fig. 2: frons parallel-sided; frons width at vertex:head width ratio 0,50–0,53; frontal setae 3–6, with middle ones usually longer; antenna about 0,5 as long as face; 1st flagellomere short, squarish, about as long as wide; arista with short rays (hairs), barely visible at high magnification (50X); face about as high as wide ventrally, slightly concave, with indistinct carina; gena with group of 2 or more setae.

Thorax: General coloration brownish gray – a mixture of ground color and the microtomentum, which is more brownish dorsally and more whitish ventrally; postpronotum, supra-alar area and area around acrostichal setae lighter; dark dorsocentral vitta, reaching dorsocentral setae, barely visible; major setae inserted in small black spots. Scutellum mostly yellow, with slight whitish microtomentum, with small, round, black spot around base of basal scutellar seta and large squarish spot around base of apical scutellar seta, the latter sometimes extending narrowly anterad and almost touching basal spot; apical part of scutellum rather strongly shiny and slightly bilobed, dorsum slightly convex. Subscutellum and dorsal 0,6–0,7 of mediotergite densely silvery microtomentose; mediotergite ventrally devoid of microtomentum, shiny black. Setulae dense, blackish on greater anterior and central part of scutum, whitish elsewhere (especially on posterior 0,3); setae mostly dark brown; dorsocentral setae aligned slightly posterior to anterior supra-alar setae; 2 anepisternal setae, ventral one often paler; 1 katepisternal seta, whitish. Calypteres whitish; halter yellow.

Legs: Yellow to brownish, femora sometimes with some diffuse blackening; setulae and setae mostly brown to blackish.

Wing (Fig. 17): Length: 5,25–6 mm. Wing with rather complicated and somewhat variable yellow and brown to blackish pattern that, in 3 specimens, resembles the letters 'IXY' (legible from base to apex). Variations from Fig. 17 are mostly restricted to distal half and include the following: 'the lower right leg' of the 'X' (disconnected in the figure) is sometimes connected to the centre of the 'X'; the 'upper left arm' of the 'Y' is sometimes isolated; the 'right side' of the 'Y' sometimes contains 1–3 hyaline spots; spot at end of vein R_{4+5} usually larger, about 0,5 as large as spot at end of vein M; vein R_{4+5} bare. Pterostigmal ratio 2,75.

Abdomen: Oval, almost entirely orange yellow, rather strongly shiny, with sparse blackish setulae and blackish marginal setae on T6; terga laterally with blackish margins; venter yellow, sterna with some blackish spots; syntergosternite 7 shiny, with about central 0,6 or more orange, base and apex black; setulae as on abdomen, but appearing finer and sparser; syntergosternal measure 2–2,5. Aculeus (Fig. 50) of gradually tapered type; in lateral view, apical 0,3 narrowed abruptly and bent ventrally.

♂: Similar to female, although considerably smaller (wing length 4,25 mm). In addition, all femora distinctly blackish posteriorly, and abdomen not predominantly shiny orange yellow, rather T1 almost entirely blackish, T2 entirely yellow, T3 with blackish lateral areas, T4 and T5 predominantly blackish, with yellow posterior margins, all distinctly microtomentose.

Material examined: Holotype ♀, KENYA: Rt. A104, 15 km SE. Nairobi, 29.iv. – 15.v.1991, A. Freidberg & Fini Kaplan, ex Stem gall *Aspilia mossambicensis*, 26.v.1991. Paratypes: same data as holotype, but not reared (1 ♂); Rt. A109, 75 km SE. Nairobi, 2/7.xii.1989, A. Freidberg & F. Kaplan (3 ♀). The holotype is double mounted (minute nadel in plastic block), is in good condition, and is deposited in TAU together with the paratypes.

Biology: This species was consistently collected on and reared from its host plant, *Aspilia mossambicensis* (Oliv.) Wild (Heliantheae). This plant is probably also the host of *O. reticulata* sp. n. which was found 15 km SE. Nairobi in large numbers on the plant but has not yet been reared from it. Galls were only found at that locality, in May, and the following brief description of galls on this plant therefore tentatively refers to both species. At the site (a large open field near Nairobi airport), *A. mossambicensis* was the dominant plant species. Most plants seemed to be free of galls. Infested plants usually supported 2–5 galls, although most of the galls were dry and empty. Galls were either acrocecidia or pleurocecidia, usually spindle-shaped, varying considerably in dimensions (length 6–20 mm; width 5–8 mm), unilocular or multilocular, having up to four exit holes. Older, dry galls were relatively easily detected on dry twigs, whereas fresh galls were usually covered by leaves and were found by bending the twigs and exposing them. In addition to the single female of *O. reducta*, several chalcidoids and bees were reared.

Etymology: Named for the reduced wing pattern.

***Oedaspis reticulata* sp. n.**

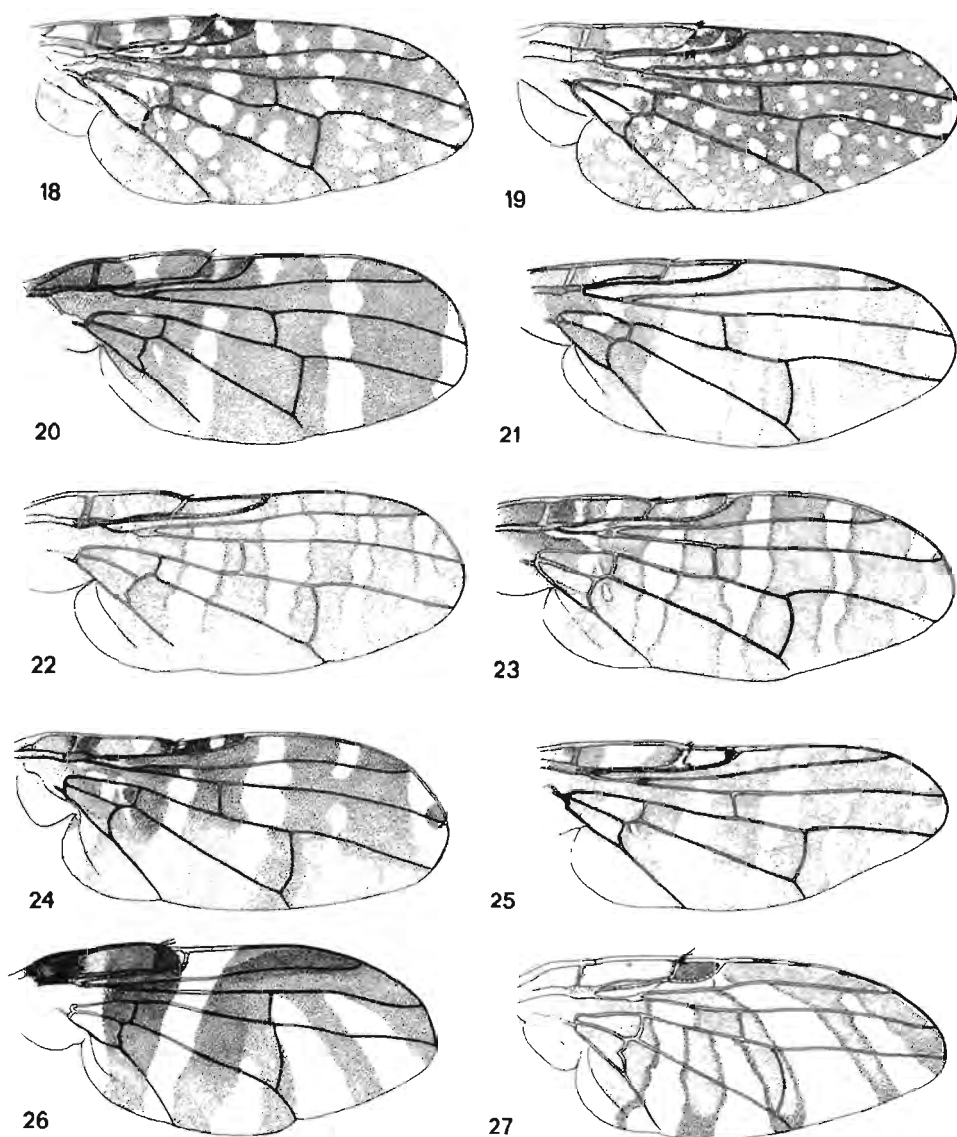
Figs 18–19, 28, 35, 42, 51, 59

Diagnosis: This is the only *Oedaspis* species with a typically reticulate wing pattern, in which no bands can be detected. *O. congoensis* and *O. montana*, with a reticulate-banded wing pattern, are the most similar congeners and possibly closely related. However, in addition to the difference in wing pattern, in *O. reticulata* the setulae on the posterior part of the scutum, pleura and scutellum are whitish, whereas in the other two species all thoracic setulae are blackish. This is the only Afrotropical oedaspidine species, in which both sexes are known, that is clearly sexually dimorphic.

Description (♀):

Head: Coloration: Generally grayish yellow to grayish brown; anterior part of frons, 1st flagellomere, base of arista, proboscis and palpus distinctly yellow; dorsal part of occiput, ocellar spot, central part of frons and lunule more or less distinctly blackish spotted; head almost entirely covered by grayish yellow microtomentum, more whitish on face; bare area present across parafacial at

level of pedicel; setulae mostly brownish, on postgena and anterior part of frons yellowish; major setae blackish, but postocellar, postvertical, outer vertical and postoculars yellow; the latter intermixed with small brown setulae; posterior orbital seta yellow or blackish. Structure: Frons width at vertex:head width ratio



Figs 18–27. Wing. 18. *Oedaspis reticulata* sp. n. (paratype). 19. *O. reticulata* sp. n. (var., paratype). 20. *O. russa* Munro. 21. *O. amani* sp. n. (holotype). 22. *O. plucheivora* sp. n. (holotype). 23. *O. serrata* sp. n. (holotype). 24. *O. trapezoidalis* Munro. 25. *O.* sp. 26. *Oedoncus taenipalpis* Speiser. 27. *Xenodorella mira* Munro. (Wings drawn from pinned specimens and therefore not entirely flattened.)

0,51–0,54; frons distinctly widened anterad; frontofacial angle about a right angle; 3–6 frontal setae, middle ones usually longer; dorsal 0,6 of face with median carina, which is more distinct between antennae, and with antennal groove laterally; ventral 0,4 of face centrally flat; ventral facial margin not protrudent; gena 0,35–0,4 height of eye; 1st flagellomere short, about 1,25–1,5 as long as wide, sometimes with indistinct dorsoapical point; arista with very short rays (hairs).

Thorax: Ground color blackish, covered by dense, grayish brown microtomentum; scutum with rather indistinct, dark, median, dorsocentral and lateral vittae or spots; major setae on small, shiny dark spots; setulae mostly blackish on greater part of scutum, to about midway between dorsocentral and acrostichal setae, but intermixed with whitish setulae; setulae on posterior part of scutum, scutellum and pleura almost all whitish; setae blackish. Dorsocentral setae aligned with anterior supra-alar setae; 2–4 anepisternal setae; 1 katepisternal seta. Scutellum blackish at base, brownish yellow distally, moderately shiny, with black spots at base of setae; spot at base of basal seta small, more or less indistinct and integrated with basal blackish area; spot at base of apical seta larger and usually well contrasted with lighter background; both apical spots sometimes indistinctly separated medially; scutellum wide triangular or trapezoidal, dorsally almost flat, barely convex. Subscutellum and mediotergite blackish with distinct gray microtomentum. Calypteres yellowish; halter yellow, with brownish or blackish knob.

Legs: brownish yellow; setae and setulae mostly blackish.

Wing (Figs 18–19): Length: 4,5–6 mm. Wing with entirely dark brown to blackish, reticulate pattern, consisting of numerous small and large, rounded, hyaline spots, extremely variable in number, size and arrangement, although larger spots generally more stable, sometimes forming 'chains' of 2–3 adjacent spots. The more stable hyaline spots are: 2 in cell c, 2 in cell r_1 (1 immediately beyond pterostigma, 1 aligned with crossvein dm-cu), 1 in cell r_{2+3} and one at base of cell r_{4+5} (both aligned with crossvein dm-cu), 1 at apex of cell r_{4+5} , 3 spots, 1 each in cell br, dm and cua_1 , forming a chain aligned with pterostigma, and 2 spots, 1 each in cell dm and cua_1 , aligned with crossvein r-m; spots at apex of cell r_{2+3} and in cell m often also large; pterostigma mostly black, with 1–2 small yellow spots. Distal section of vein Sc distinctly slanted, forming unusual large angle with basal section; vein R_{4+5} with several setulae at node. Pterostigmal ratio 2–2,5.

Abdomen: Oval, dark brown to black, shiny, with sparse microtomentum almost entirely restricted to base, with blackish setulae and setae. Syntergosternite 7 dorsally mostly blackish, ventrally mostly brownish, shiny; syntergosternal measure 2–3. Aculeus (Fig. 51) of arrow-like type, with serration coarse and centrally interrupted, comprised of few thick teeth. Spermatheca as in Fig. 59.

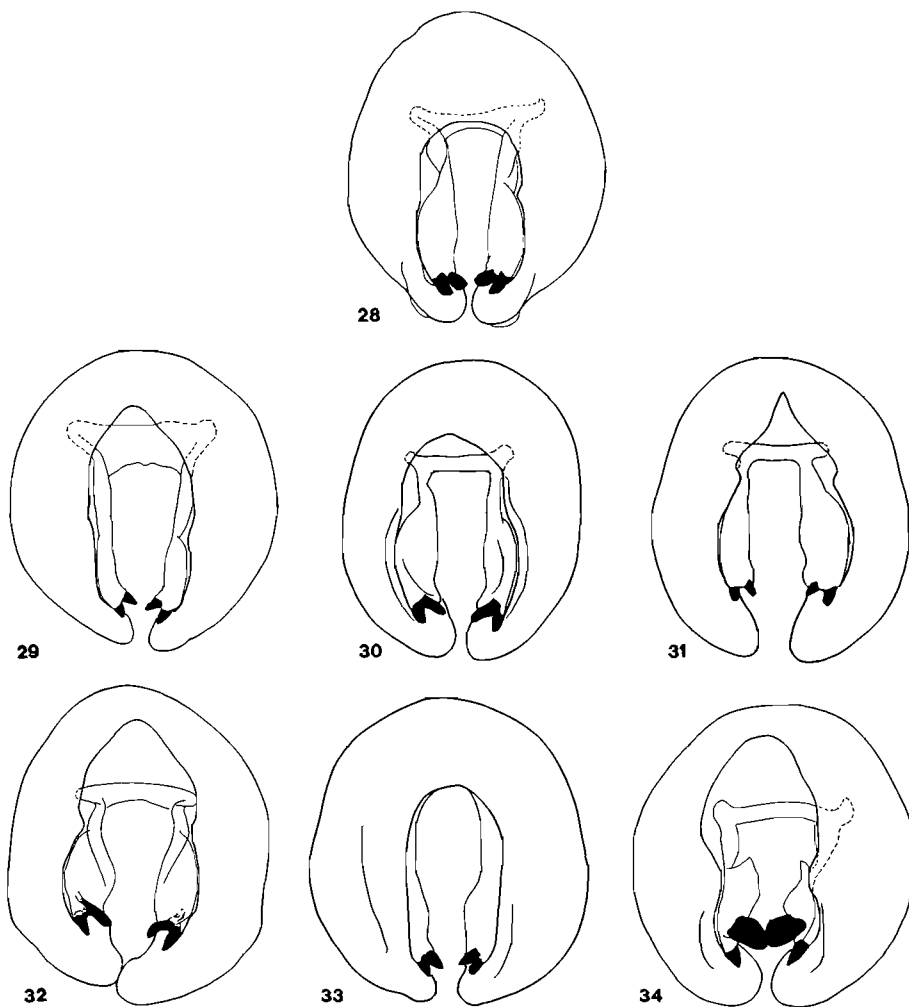
♂: Essentially similar to female, but generally more lightly colored, less shiny and smaller (wing length 4,5–5,5 mm). Wing pattern yellow to brown. Fore femur posteriorly often with blackish stripes. Abdomen usually predominantly blackish and entirely densely microtomentose, only slightly shiny; posterior

margins of terga occasionally yellowish; setulae whitish. Epandrium as in Figs 28, 35. Distiphallus as in Fig. 42.

Material examined: Holotype ♀, KENYA: Rt. A104, 15 km SE. Nairobi, 29.iv. – 15.v.1991, A. Freidberg & Fini Kaplan. Paratypes: 83 ♂ 15 ♀, same data as holotype. The holotype is double mounted, in excellent condition and deposited in TAU. Paratypes are in TAU, BMNH, NCIP and USNM.

Biology: All specimens were collected by sweeping *Aspilia mossambicensis* (Oliv.) Wild (Heliantheae). Although we are sure that the species is a gall former on this plant, we were unable to rear it (see also biology of *O. reducta*).

Etymology: Named for the reticulate wing pattern.



Figs 28–34. Epandrium, posterior view. 28. *Oedaspis reticulata* sp. n. (paratype). 29. *O. amani* sp. n. 30. *O. plucheivora* sp. n. 31. *O. serrata* sp. n. 32. *O. trapezoidalis* Munro. 33. *O.* sp. 34. *Oedoncus taenipalpis* Speiser.

Oedaspis russa Munro

Figs 6, 20, 52

Oedaspis (Tylaspis) russa Munro, 1935a: 35 (original description and biology).*Tylaspis russa*: Munro, 1952: 219 (key); Cogan & Munro, 1980: 541 (Afrotropical catalogue).

We studied the following material from South Africa: *Natal Province*: 3 ♂ 1 ♀ paratypes, Durban (Bluff), x.1934, M. 452 or M.471, W. E. Marriott; 2 ♂ paratypes, Umkomaas, 8.x.[19]34, H. K. Munro; 1 ♂, Durban (Benmore), viii.1936, W. E. Marriott (NCIP, NMSA); *Cape Province*: 1 ♀, Tsitsikama forest nr. Storms river, Forest and forest margin, 3423BB, 7.xii.1979, J. Londt & B. Stuckenberg (NMSA). The latter female is much larger than other studied specimens (wing length 5,5 mm cf. 4 mm), but otherwise is similar. The original description is adequate. The scutellum is strongly bilobed and shiny (Fig. 6). The unique wing pattern (Fig. 20) is intermediate between the *Oedaspis* and *trapezoidalis* types of wing pattern, as defined in the introduction to this paper. The aculeus (Fig. 52) is of the gradually tapered type, but is unique in having delicate serration, rather than a smooth edge. Munro (1935a) reared this species from stem galls on *Helichrysum auriculatum* Less [= *H. panduratum* O. Hoffmann (Hilliard, 1977)] and *H. cymosum* (L.) D. Don (Inuleae).

trapezoidalis species group

Until now this group comprised only one species, *Oedaspis trapezoidalis* Munro. Specimens of the three new species described below were misidentified in the past as *O. trapezoidalis* because of the close similarity among them. We now recognise at least five closely related species in this group.

The *trapezoidalis* group is distinguished from all other members of *Oedaspis* and all other oedaspidines by the following combination of characters, of which the body coloration and wing pattern are the most diagnostic: Ground color of body, including subscutellum, mediotergite and legs, predominantly yellow; abdomen occasionally reddish, rarely with darker spots. Dorsocentral, acrostichal and intra-alar setae inserted in small black spots; scutellar setae inserted in larger black spots. Cephalic and body setae yellowish to dark brown, fine, almost always acuminate; postocellar, outer vertical and postoculars sometimes intermediate between acuminate and lanceolate. First flagellomere oval, about 1,5 times as long as wide; arista bare. Microtomentum lacking or very sparse. Dorsocentral setae aligned slightly posterior of anterior supra-alar setae. Scutellum (Fig. 7) dorsally flat or slightly convex, usually trapezoidal, occasionally more rounded or triangular, rarely weakly emarginate apically (these variations are slight and occur both inter- and intraspecifically). Wing (Figs 21–25): Pterostigmal ratio 3,2–3,8. Crossvein r-m placed more or less opposite middle of cell dm. Pattern comprises 4 rather wide and distinct, yellow to blackish, transverse bands, with sub-basal band more or less broadly united with extreme basal dark area of wing, and with apical band represented by often isolated dark spots at end of veins R_{4+5} and M, spots occasionally united with adjacent preapical band. Complete transverse hyaline band present across middle of wing between crossveins r-m and dm-cu (band distinct but narrowly

interrupted once or more in 5 (20%) of the specimens). In other Afrotropical species of *Oedaspis* a complete transverse hyaline band is lacking, or if present, its placement or shape are entirely different (in *Oedaspis quinotata* (Fig. 16) placed between preapical and apical bands; in *Oedaspis reducta* (Fig. 17) slanted and part of large hyaline area that extends more distally, even beyond cubital band; in *Oedoncus taenipalpis* (Fig. 26) placed between basal and discal bands). Costal spines small, barely distinguishable. Vein R_{4+5} setose only at node.

Given the scarcity of material of this group and because there is no firm association between males and females, we choose to establish species concepts on females only. Our decision is derived from the fact that in this group females are more readily distinguished from each other than males, based on the generally easily perceivable differences in their terminalia, often even without the need for dissection. Males are not designated as paratypes, but are described and illustrated because small but clear differences exist in their terminalia.

A genus-group name, *Munroedaspis* Hering (with type species *Oedaspis trapezoidalis* Munro), is available, if the *trapezoidalis* group is to be accorded generic or subgeneric rank. The name is currently treated as a junior synonym of *Oedaspis*.

***Oedaspis amani* sp. n.**

Figs 21, 29, 36, 43, 53

Diagnosis: ♀: This species is distinguished from other members of the *trapezoidalis* group by the following combination of characters: katepisternal seta present, sub-basal band of wing almost entirely separate from dark basal area by an almost complete transverse hyaline band from vein C to vein CuA, aculeus of the gradually tapered type, unique among the *trapezoidalis* group in not being arrow-like and serrate.

Description (♀):

Head: Frons parallel-sided; frons width at vertex:head width ratio 0,5. Frontal setae: 7 on right side, 6 on left side, generally decreasing in length anterad; postocellar, outer vertical and 6–7 larger postoculars pale yellow, rather lanceolate; the latter intermixed with smaller and finer setae.

Thorax: Setulae yellow or brown depending on direction of illumination; dorsocentral setae aligned halfway between anterior supra-alar setae and acrostichal setae, inserted in tiny black spots; acrostichal spot slightly larger; intra-alar spot still larger. Scutellum trapezoidal, rounded; distance between apical spots equal to diameter of spot; distance between apical and basal spots 1,5 times diameter of basal spot; 3 anepisternal setae, dorsal seta largest, ventral one smallest; katepisternal seta present.

Wing (Fig. 21): Length: 5,7 mm. Pattern brownish yellow; more or less distinct hyaline band separates almost completely brown base of wing from sub-basal band; transverse hyaline band between crossveins r-m and dm-cu narrowly interrupted in cell r_1 along vein R_{2+3} ; distal border of brown preapical band concave, band united with spot at end of vein M; dark spot at end of vein R_{4+5}

small, triangular, isolated. Vein R_{4+5} straight; vein M somewhat wavy, but generally parallel to vein R_{4+5} . Pterostigmal ratio 3,2.

Abdomen: Including sytergosternite 7 yellow, but tip of sytergosternite 7 blackish; setulae brownish yellow; sytergosternal measure 2,5. Aculeus (Fig. 53) of gradually tapered type.

♂: Essentially similar to female, including the most diagnostic external character, namely the distinct hyaline band between sub-basal band and dark base of wing. Epandrium (Figs 29, 36) nearly rounded in posterior view, with prenisetae small and near apex of outer surstylus; distiphallus (Fig. 43) with rather complex sclerotisation.

Material examined: Holotype ♀, TANZANIA: East Usambara, Amani, 1000 m, 5.ii.1977, H. Enghoff, O. Lomholdt, O. Martin, Zool. Mus. Copenhagen. Additional specimen: MALAWI: Cholo, R. C. Wood (1 ♂, BMNH). The holotype is double mounted (minute nadel in *Polyporus* block), with the abdomen stored in a microvial attached to the pin, is in good condition, and is deposited in ZMUC.

Etymology: Named for the type locality.

***Oedaspis plucheivora* sp. n.**

Figs 22, 30, 37, 44, 54

Oedaspis trapezoidalis Munro, 1940: 76 (redescription and biology; misidentification).

Diagnosis: ♀: This species is distinguished from other members of the *trapezoidalis* group by the following combination of characters: scutum with light but distinct microtomentum, diameter of black scutellar spots large, dark apical spots on wing large; aculeus of arrow-like type, relatively broad and with fine serration.

Description (♀):

Head: Shrivelled, hence frons dimensions not measurable; setae and setulae yellowish; frontal setae 6–7.

Thorax: Ground color yellowish; microtomentum yellowish, rather conspicuous; setulae brownish or yellowish, depending on angle of illumination; dorsocentral setae aligned slightly but distinctly posterior to anterior supra-alar setae; dorsocentral, postalar and acrostichal setae inserted in small subequal, blackish spots; 2–3 anepisternal setae, dorsal seta the largest; katepisternal seta present. Scutellum short, trapezoidal, with large black spots; distance between apical and basal spots about twice diameter of spot; distance between apical spots equal diameter of spot.

Wing (Fig. 22): Length: 4,5 mm. Pattern brownish yellow, comprising dark base, 4 rather distinct bands and 2 rather large apical spots at ends of veins R_{4+5} and M; sub-basal band broadly united with dark basal area, the only distinct hyaline area between the 2 being hyaline spot at centre of cell bm; distal border of preapical band slightly undulate; large spots at end of veins R_{4+5} and M generally narrowly isolated from preapical band, but spot on R_{4+5} of left wing

broken into 2 parts, with anterior part narrowly connected to preapical band (but characters of 2 spots variable in other specimens). Veins R_{4+5} and M generally parallel, at most slightly divergent apically. Pterostigmal ratio 3,5.

Abdomen: Brownish yellow; setulae brown; syntergosternite 7 blackish; syntergosternal measure 2–3. Aculeus (Fig. 54) of arrow-like type, relatively broad and with fine serration.

♂: Similar to female. Epandrium (Figs 30, 37) somewhat elongate oval in posterior view, with prensisetae large and near apex of outer surstylus; distiphallus (Fig. 44) with slight sclerotisation restricted to base (2 ♂ from Njelele River, marked M. 677 and M. 678 respectively were dissected).

Variation: The 4 ♂ 1 ♀ recorded below under 'Additional specimens', are similar to the female holotype, although some notable variations exist. They all have relatively larger and closer together, black scutellar spots than all other species of the group. This situation reaches an extreme in the female, in which the distance between any two adjacent spots is less than the diameter of a spot. However, in some of the specimens the basal scutellar spot is smaller than the apical spot, and the distance between the two spots is sometimes 1,5 times greater than the diameter of an apical spot. In addition, the degree of coalescence of the brownish bands and spots in the wing is greater in males, and in particular one from Njelele River, where the cubital and preapical bands and apical spots are so closely united that the pattern can almost be termed 'reticulate-banded'. Wing length: 4,1–4,7 mm.

Material examined: Holotype ♀, SOUTH AFRICA: Bushbuckridge, (Culcutta 51), ii.1950, W. H. Ghent, M. 1010. Paratype ♀, Mkuzi R., Shenton's Dft., viii.1946, H. K. Munro, M. 818 (NCIP). Additional specimens: Njelele R., N. Tvl. (farm 'Joan'), ix.1939, H. K. Munro (1 ♂ marked M. 677, 2 ♂ M. 678, NCIP). ZAMBIA: Chilanga, 15.xi.[19]13, R. C. Wood, Vegetation by stream. Also: '*Oedaspis trapezoidalis* Mro det HKMunro 1945' (1 ♂, BMNH). The holotype is double mounted (minute nadel in *Polyporus* block), is in good condition (abdomen stored in microvial attached to pin), and is deposited together with most other specimens in NCIP; 1 specimen from Njelele River in TAU.

Biology: According to Munro (1940), the specimens from Njelele River (recorded as *O. trapezoidalis*), were reared from stem galls on *Pluchea dioscoridis* (L.) Desf. (Inuleae).

Etymology: Named for the recorded host plant.

***Oedaspis serrata* sp. n.**

Figs 7, 23, 31, 38, 45, 55

Tylaspis trapezoidalis Munro, 1962: 451 (misidentification).

Diagnosis: ♀: This species is distinguished from other members of the *trapezoidalis* group by the following combination of characters: katapisternal seta lacking or not differentiated, veins R_{4+5} and M rather strongly divergent distally, aculeus of arrow-like type, relatively broad, with coarse serration.

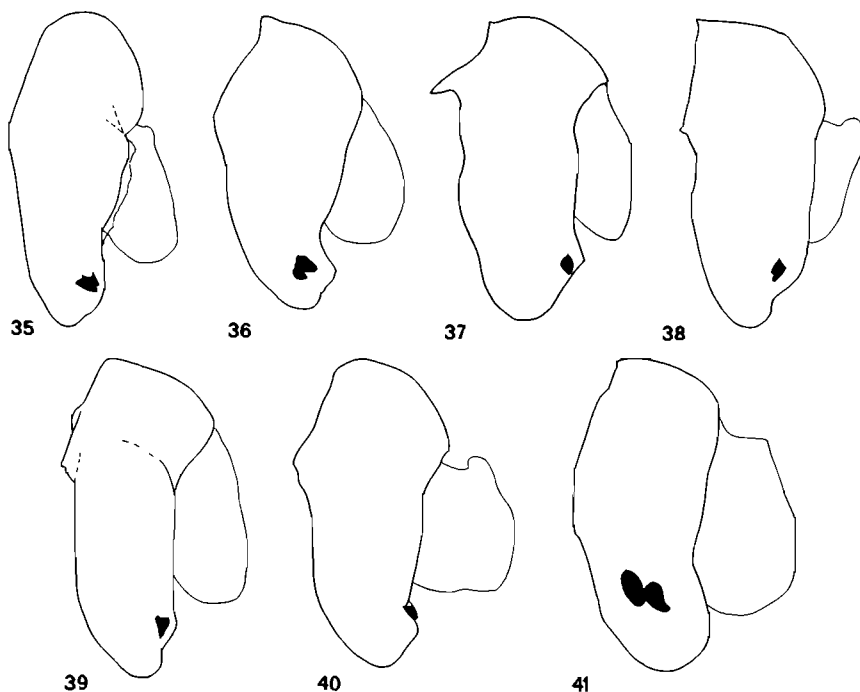
Description (♀):

Head: Frons parallel-sided; frons width at vertex:head width ratio 0,5. Frontal setae: 3 on right side (but 1 broken), 4 on left side, but 1-2 shorter; postocellar, postvertical and 3-4 postoculars at dorsal half of row pale yellow, rather lanceolate, the latter intermixed with smaller and finer setae.

Thorax: Setulae yellow to brown, but some dark because of greasiness; dorsocentral setae aligned slightly posterior to anterior supra-alar setae, inserted on tiny black spots; acrostichal seta on larger black spot, 1 supernumerary acrostichal seta on right side; postalar seta inserted on tiny black spot. Scutellum trapezoidal (Fig. 7); distance between apical spots 0,5 times diameter of spot; distance between apical and basal spots (of one side) about 2,5 times diameter of either spot; 2 anepisternal setae, katepisternal seta lacking.

Wing (Fig. 23): Length 5,5 mm. Pattern brownish yellow; distal border of preapical band in cell r_{4+5} distinctly convex; end of vein R_{4+5} with small, oval, isolated brown spot; end of vein M with small triangular spot touching preapical band along vein M; hyaline bands narrow, rather uniform and regular. Veins R_{4+5} and M rather strongly divergent at apex. Pterostigmal ratio 3,3.

Abdomen: Orange; setulae and setae brown; syntergosternite 7 black at base and apex, orange centrally; syntergosternal measure 2. Aculeus (Fig. 55) of arrow-like type, with coarse serration.



Figs 35-41. Epandrium, lateral view. 35. *Oedaspis reticulata* sp. n. (paratype). 36. *O. amani* sp. n. 37. *O. plucheivora* sp. n. 38. *O. serrata* sp. n. 39. *O. trapezoidalis* Munro. 40. *O.* sp. 41. *Oedoncus taenipalpis* Speiser.

♂: Similar to female especially in lacking katapisternal seta, and also in the narrow, uniform and regular hyaline bands of the wing. This wing pattern is different from the wider and less regular hyaline bands (especially the interrupted hyaline band distal to the dark cubital band) in *O. trapezoidalis*, the only other known species that lacks a katapisternal seta, and is the main reason why the two Tanzanian males recorded below are not assigned to *O. trapezoidalis*. However, in the males veins R_{4+5} and M are parallel, and this casts some doubt as to whether they are conspecific with the female holotype. Epandrium (Figs 31, 38) somewhat elongate oval in posterior view, with prensisetæ small and far from apex of outer surstylus; distiphallus (Fig. 45) with large sclerotised area filling entire width at more than basal half. The epandrium of the reared male from Kenya is similar to the illustrated epandrium of the male from Tanzania, but the distiphallus is too teneral for comparison.

Material examined: Holotype ♀, KENYA: 50 km N. Mombasa, 4.xii.1989, A. Freidberg & Fini Kaplan, swept from *Pluchea dioscoridis* (L.) DC. (Inuleae). Additional specimens: KENYA: Rt. A109, Hunter's Lodge, 2/7.xii.1989, A. Freidberg and Fini Kaplan, ex stem gall *Pluchea sordida* (Vatke) Oliv. (1 ♂, teneral, TAU). TANZANIA: Handeni, 350 m, 25/27.iv.1957, Mission Zoolog. I.R.S.A.C en Afrique orientale (P. Basilewsky et N. Leleup); 'Oedaspis trapezoidalis Mro. det HKMunro 1960' (2 ♂, MRAC). The holotype is double mounted (minute nadel in plastic block), is in good condition, with the abdomen stored in a microvial attached to the pin, and is deposited in TAU.

Biology: The following comments refer to the Kenyan male only, which may eventually be found not to be conspecific with the holotype. This male was stuck in its gall whilst trying to emerge, and was so discovered several months after the gall was collected. Unfortunately, no other specimen emerged from the 15 galls collected from the host plants during our repeated visits to the site in December 1989. The plants were plentiful, and another tephritid, a species of *Schistopterum*, was collected and reared from the flower heads in large numbers. Only one, empty, gall was found in the same place in May 1991. The galls were monothalamous, pyriform or ovoid, thick-walled, and averaged 10×5 mm. Some were terminal, but others occupied the branching points of twigs. They dessicated quickly after collection.

Etymology: Named for the shape of the aculeus, which is distinctly and coarsely serrate preapically.

Oedaspis trapezoidalis Munro

Figs 24, 32, 39, 46, 56

Oedaspis trapezoidalis Munro, 1938: 167; Munro, 1940: 76 (redescription and biology (misidentification, see *O. plucheivora* sp. n.)); Hering, 1954: 170 (Tanzania record).

Tylaspis trapezoidalis: Munro, 1952: 219 (key); Munro, 1962: 451 (locality record); Cogan & Munro, 1980: 541 (Afrotropical catalogue).

Munro's (1938) description is mostly adequate, except that a black spot is present at the base of the prescutellar, not presutural seta, there is usually 1 anepisternal seta, but occasionally 1–2 smaller setae more ventrally, a

katapisternal seta is lacking, vein R_{4+5} with several (about 5) setulae at and near node, and pterostigma is mostly yellow, not blackish. The terminalia are described here for the first time. In addition to the female holotype, we studied 5 ♀ 1 ♂, mostly from West African countries. The wing pattern is blackish in the female (Fig. 24) and brownish yellow in the male. Cubital and preapical bands are usually united to form the letter 'H' or a similar pattern. The aculeus is of the arrow-like type (Fig. 56), and is the most slender among those species of the *trapezoidalis* group that have this type. The female from Kenya differs from the others recorded below by the distally convex (not concave) preapical band in the wing and by the aculeus, which is more prolonged, especially at the arrow-like apex, and has the serration restricted to the basal half (not three-fifths) of the apex. The epandrium (Figs 32, 39) is similar to that of *O. plucheivora* (Figs 30, 37) in both views, but the prensisetae lie far from the apex of the outer surstylus; distiphallus (Fig. 46) with narrow longitudinal sclerotisation.

Material examined: Holotype ♀, ZAÏRE: Katanga, Kapanga, iii.1933, F. G. Overlaet (NCIP, according to Munro (1938) should be in MRAC). Additional specimens: NIGERIA: Ibadan, UI Botanical Garden, 26.i.1973, M. A. Cornes (1 ♀, BMNH). CAMEROON: Lolodorf, 24.ix.1913, A. I. Good (1 ♀, CMP); Yaounde, 5.vii.1975, J. A. W. Lucas (1 ♂, ZMUA); 20 km S. Bamenda, 1800 m, 22.xi.1987, A. Freidberg (1 ♀, TAU). GABON: Ngounie, Ebando, 1°36'S:11°31'E, 23.i.1986, A. Pauly (1 ♀, FSA). ANGOLA: (A27), Duque de Braganca Falls, 11–12.iii.1972, Southern Afr. Exp. B.M. 1972–1 (1 ♀, BMNH). KENYA: Kapsoit, 21.xi.1989, A. Freidberg & F. Kaplan, ex stem gall *Blumea axillaris*, 22.xi.1989 (1 ♀, TAU).

Biology: The Kenyan female was reared from a stem gall on *Blumea axillaris* (Lam.) DC. (Inuleae). The gall was discovered in a sample of plants only after the female had emerged. The gall, more or less ovoid and about 2 × 1.5 cm in size, was located at the midheight of the main stem, and had an upper extension with a short side branch. It was rather woody and did not shrivel much even after being pressed. The upper and lower parts each apparently served as a cell for different fly specimens, as indicated by two exit holes detected in these parts respectively. One specimen apparently escaped before we collected the plant. Additional, similar but empty, galls were found on the same species of host, in May, 20 km south of Kapsabet (western Kenya).

Munro's (1940) record of *Pluchea dioscoridis* as host for this species actually refers to *O. plucheivora* sp. n.

Oedaspis sp.

Figs 25, 33, 40, 47

The male described below is undoubtedly a member of the *trapezoidalis* group. It differs from the other four species by the following combination of characters: 2 anepisternal setae; katapisternal seta present; scutellum weakly but distinctly emarginate apically, black spot at base of basal scutellar seta unusually small, and distance between basal and apical spots 3–4 times larger than diameter of apical spot; scutal setulae distinctly blackish; wing bands distinctly slanted, discal band

more distal in position, reaching well beyond pterostigma in cell r_1 (Fig. 25); epandrium (Figs 33, 40) almost rounded in posterior view, with prensisetae small and near apex of outer surstylus; distiphallus (Fig. 47) with capsule-like sclerotisation.

This species is left unnamed because all close congeners are based on females, and although it appears distinct, there is a possibility that it is conspecific with one of the previously described females.

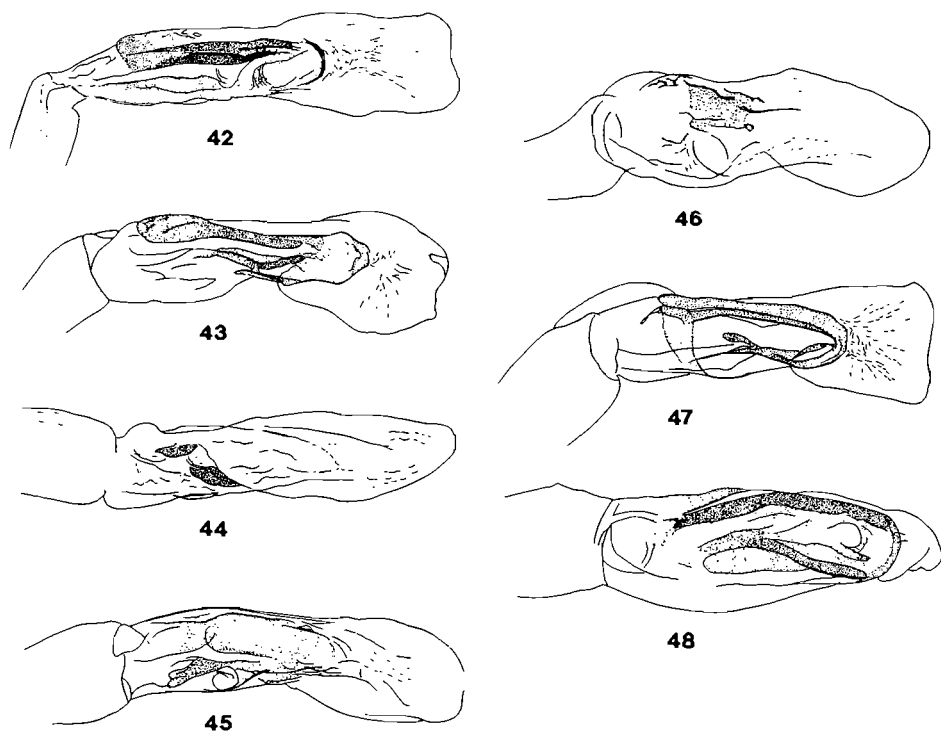
Material examined: CAMEROON: 25 km N. Bertoua, 1.iii.1972, at black light, J. A. Gruwell (1 ♂, USNM).

Oedoncus Speiser

Oedoncus Speiser, 1924: 154; Munro, 1947: 239 (taxonomic notes); Cogan & Munro, 1980: 540 (Afrotropical catalogue). Type species: *Oedoncus taenipalpis* Speiser, 1924: 155, by monotypy.

Rhynchoedaspis Bezzi, 1924a: 508; Bezzi, 1924b: 121 (review). Type species: *Rhynchoedaspis munroana* Bezzi, 1924a: 509, by original designation.

In our opinion this monotypic genus was properly assigned in the Oedaspidini (Cogan & Munro 1980: 540) despite having long mouthparts (see comments



Figs 42–48. Distiphallus. 42. *Oedaspis reticulata* sp. n. (paratype). 43. *O. amani* sp. n. 44. *O. plucheivora* sp. n. 45. *O. serrata* sp. n. 46. *O. trapezoidalis* Munro. 47. *O.* sp. 48. *Oedoncus taenipalpis* Speiser.

under *Xenodorella*). Speiser's (1924) and Bezzi's (1924a) descriptions are essentially adequate, although Speiser erred when he said: 'r₄₊₅ sicher nackt', and Bezzi ignored this character. This vein is sparsely but distinctly setose on both sections. The arista has short but distinct rays (hairs), and is not bare as stated by Speiser. The mesofrons is not bare, as stated by Bezzi; anteromedially it has several (2–7) white setulae. Other notable characters are the long, geniculate proboscis (Fig. 3) and the extreme proximity of crossveins r-m and dm-cu (Fig. 26), both observed by these authors. The postorbitals comprise 2–5 long, white, lanceolate setae intermixed with numerous small dark setulae. The pterostigma is unusually short, only slightly longer than wide. A complete, transverse hyaline band is present between the sub-basal and discal bands.

Oedoncus taenipalpis Speiser

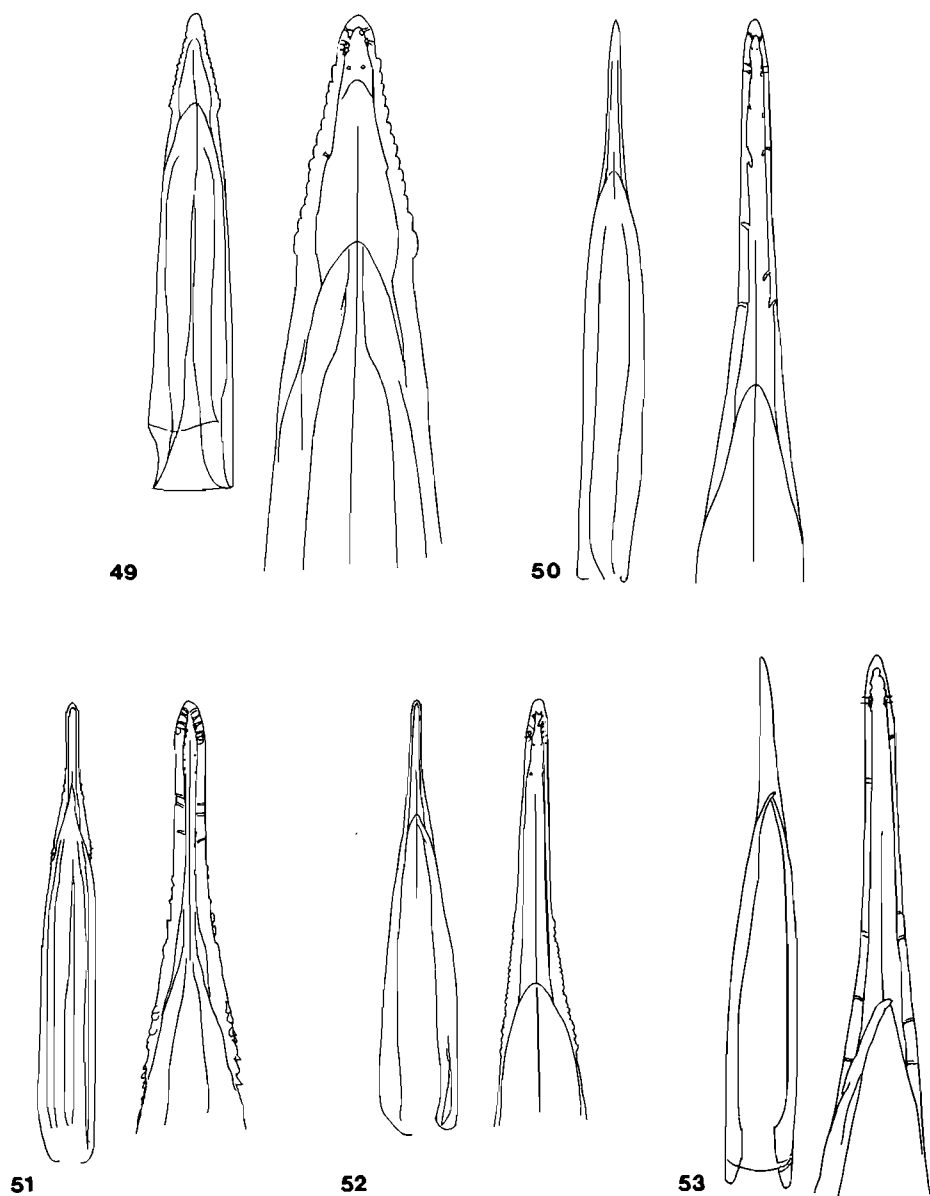
Figs 3, 26, 34, 41, 48, 57

Oedoncus taenipalpis Speiser, 1924: 155; Munro, 1935b: 609 (morphological notes); Cogan & Munro, 1980: 540 (Afrotropical catalogue).

Rhynchoedaspis munroana Bezzi, 1924a: 509; Bezzi, 1924b: 121 (distributional notes).

This is the most widespread species of the tribe in Africa, previously recorded from Tanzania (type locality), Malawi, Zimbabwe, Mozambique and South Africa (Cogan & Munro 1980; Hancock 1986). New material studied recently expands the known distribution to Kenya and Ethiopia. Speiser's (1924) and Bezzi's (1924a) descriptions are generally adequate. From these descriptions and the material to hand an interesting, possibly geographical, variation becomes obvious. In all South African specimens (Bezzi 1924a) the very base of the wing is blackish in a similar way to the remaining bands and this blackish area is distinctly separate from the sub-basal band by a clear hyaline gap. In two East African specimens the situation is similar, except that the gap between the blackish basal area and sub-basal band is not hyaline, rather dark brown rendering the two blackish areas almost confluent (see Fig. 26 & Speiser 1924). In three other East African specimens the basal area is at most represented by a gray cloud, and the wing pattern practically begins with the sub-basal band. Until more evidence is established to support a different conclusion, we maintain that this is merely intraspecific variation. Epandrium (Figs 34, 41) rounded in posterior view. Distiphallus (Fig. 48) with the usual sclerotisation. Aculeus (Fig. 57) of the gradually tapered type.

Material examined: ETHIOPIA: Bale Mts., 3000–3300 m, 15.xii.1989, A. Freidberg & F. Kaplan (2 ♂, TAU). KENYA: Tangelbei, 30 km NE. Lake Baringo, 28.xi.1986, A. Freidberg (1 ♀); Tsavo West, Kilaguni Lodge, 6.xii.1989, A. Freidberg & F. Kaplan (1 ♀); Tsavo West, Ngulia, 6.xii.1989, A. Freidberg & F. Kaplan (1 ♂) (all TAU). BOTSWANA/NAMIBIA: Kabulabula, Chobe River, 11–24.vii.1930, V.-L. Kal. Exp. (1 ♂ 2 ♀, NMSA); Pretoria N., 29.ix.1935, G. van Son (1 ♂, NMSA); Pretoria, Roodeplaat, ix.1960, J. Bot (1 ♂ 1 ♀, TAU). MOZAMBIQUE: Port Amelia, 1914, F. V. Beste, 'Rhynchoedaspis munroana Co-Type' (1 ♂, BMNH).



Figs 49–53. Aculeus (whole and apex). 49. *Oedaspis maraisi* Munro (paratype). 50. *O. reducta* sp. n. (paratype). 51. *O. reticulata* sp. n. (paratype). 52. *O. russa* Munro (paratype). 53. *O. amani* sp. n. (holotype).

Xenodorella Munro

Xenodorella Munro, 1967: 13; Cogan & Munro, 1980: 534 (Afrotropical catalogue). Type species: *Xenodorella mira* Munro, 1967: 13, by original designation and monotypy.

Munro (1967) discussed the possible, although indefinite placement of this monotypic genus in the Oedaspidini. Cogan & Munro (1980: 534) placed it in their 'unplaced genera near Acanthoneurinae'. A cause for Munro's hesitation is the extremely long head and mouthparts (Fig. 4). This is indeed a very unusual character for the Oedaspidini, which are almost invariably characterised by a short, often reduced (and probably non-functional) proboscis (Freidberg & Kugler 1989), a unique synapomorphy. Prolonged mouthparts are also characteristic of *Oedoncus*, albeit not to the same extent as in *Xenodorella*, and also occur in the Neotropical *Hetschkomyia* Hendel (Cecidocharina; Norrbom, personal communication). The situation in *Xenodorella* and *Oedoncus* is probably an autapomorphy within Oedaspidini. The two genera also share the short but distinct rays (hairs) on the arista (in all other Afrotropical oedaspidines the arista is bare or with very short rays). Another unusual character in *Xenodorella* is the relatively long syntergosternite 7, which is about as long as the preabdomen (syntergosternal measure 6). In most Old World Oedaspidini the syntergosternal measure is only 2–3, and again, only *Oedoncus* (with syntergosternal measure 4) approaches *Xenodorella*. Synapomorphies shared by *Xenodorella* and most or many other oedaspidines are the strongly convex and shiny black scutellum, the richly and typically banded wing pattern (Fig. 27), and the tufts of coarse white setulae on the thorax; the latter are especially common in American species. These synapomorphies are sufficient, in our opinion, to warrant the inclusion of this genus in the Oedaspidini. If immature stages of *Xenodorella* and *Oedoncus* are discovered in stem galls on Asteraceae, it would further substantiate their inclusion in this tribe.

Xenodorella mira Munro

Figs 4, 27, 58

Xenodorella mira Munro, 1967: 13; Cogan & Munro, 1980: 534 (Afrotropical catalogue).

We studied the two females comprising the type series and another recently collected female, all from Namibia. Munro's (1967) description is generally adequate. There are, however, 3 not 4 white postorbital setae; the 4th white (not dark) seta at the dorsal end of this row is the outer vertical. The inner vertical seta is brownish. The dorsocentral setae are aligned only slightly anterior to the anterior supra-alar setae. In the wing (typical *Oedaspis* type, Fig. 27), vein R_{4+5} with 0–1 setulae at node, 0–2 setulae on distal section. Length of syntergosternite 7 about 2 mm. Aculeus (Fig. 58) of gradually tapered type.

Material examined: Holotype ♀, NAMIBIA: Namib Game Park, Hotsas Bore, 19.iv.1966, H. D. Brown; ♀ paratype, same data except Alc.-ether washed, dissected, abdomen missing (NCIP). Additional specimen: 13 km W. Otavi Road 69, 19°38'S:17°14'E, 23.iii.1984, Londt & Stuckenberg, Acacia thornveld with little grass (1 ♀, NMSA).

[*Chrysotrypanea* Malloch]

Chrysotrypanea Malloch, 1939: 457; Hardy & Foote, 1989: 527 (Australasia and Oceania catalogue).

Type species: *Chrysotrypanea trifasciata* Malloch, 1939: 457, by original designation and monotypy.

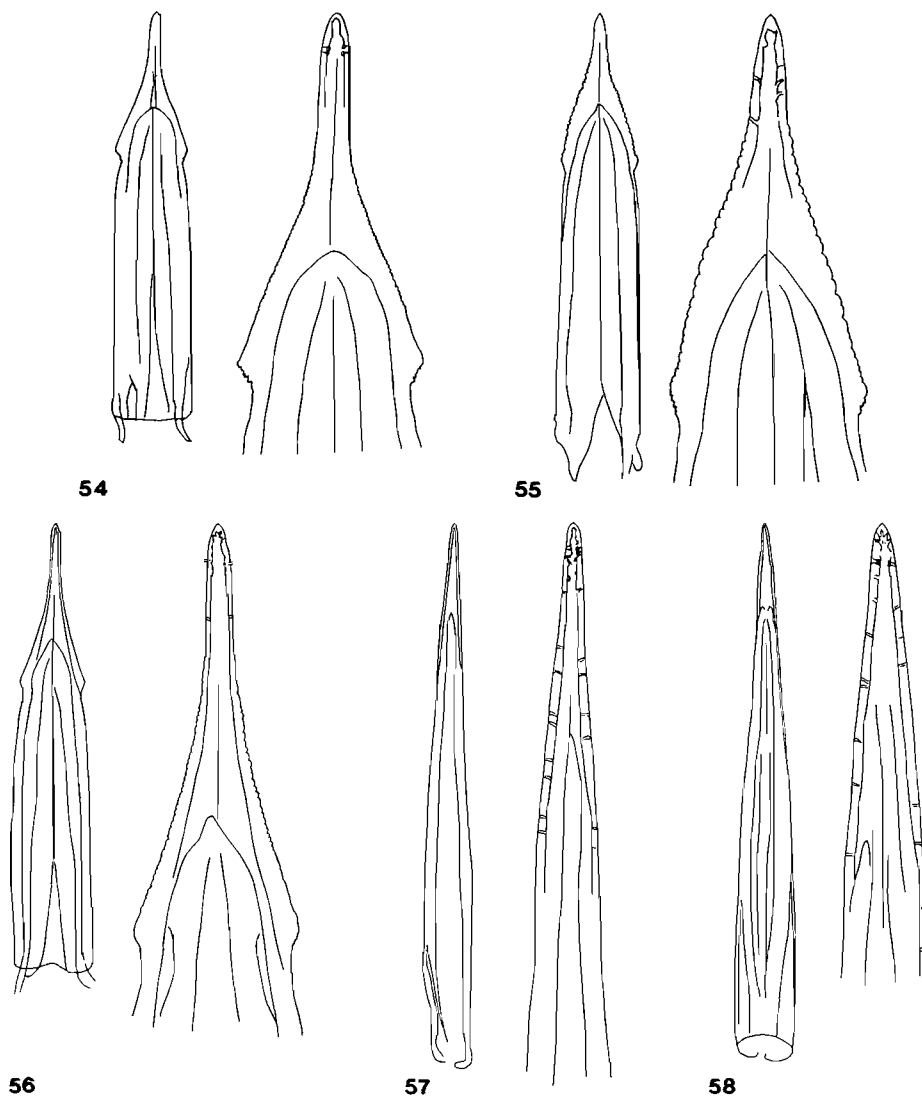
This genus, which contains two Australian species, was placed in the Tephritini (Hardy & Foote 1989), but we have no doubt that it belongs in the Oedaspidini and also suspect that it should be synonymised with *Oedaspis*. We studied a male reared by G. Bush and identified by him as *Chrysotrypanea trifasciata* and two additional males identified by him as *Chrysotrypanea* sp. n. (USNM) (see also Bush 1966). The reared male fits Malloch's (1939) description, except that the apical scutellar seta is long and equal to the basal seta, not microscopic, as stated (apparently erroneously) by Malloch. Malloch's rearing record from dogwood (*Cornus*, Cornaceae) is apparently also a mistake; Bush (1966) recorded his specimens of *C. trifasciata* as reared from stem galls on *Helichrysum dendroideum* N.A. Wakefield (Inuleae). Based on Malloch's description and the external study of the above mentioned specimens we failed to detect any reliable apomorphic characters to justify or support the generic concept. Moreover, the male terminalia, dissected from the reared male, are similar to those of *Oedaspis*. The only character that may help diagnose the genus is the apparently normally capitate proboscis, which differs somewhat from the reduced proboscis of *Oedaspis*. Whether this character alone warrants a generic rank is unclear to us, but, in view of the limited material at hand, we refrain from synonymising *Chrysotrypanea* with *Oedaspis* at this time.

[*Oedaspoides* Hendel]

Oedaspoides Hendel, 1927a: 63; Hardy & Foote, 1989: 522 (Australasia and Oceania catalogue).

Type species: *Oedaspoides acuticornis* Hendel, 1927a: 63, by monotypy.

This genus contains two Australian species (Hardy & Foote 1989). We studied a female of *Oedaspoides acuticornis* (BMNH) and ten male syntypes of *Oedaspoides escheri* Bezzi, 1910 (ETHZ), all from Sydney. There are two characters that distinguish this genus from others in the tribe. The first is the apicodorsal point on the 1st flagellomere, which Hendel used to diagnose the genus. However, in our opinion, this character by itself does not warrant generic rank, especially in view of its occurrence in the central Palearctic *Oedaspis dichotoma* Loew (not studied by us) (see eg. Hendel 1927b). In addition, all studied specimens have 2 frontal setae (except one male of *O. escheri* that has 3 setae), a character that only doubtfully warrants generic rank. Other characters generally are as in *Oedaspis*: the scutellum is slightly to moderately convex and shiny; the proboscis is short, but apparently slightly less reduced than in *Oedaspis*; the wing has the *Oedaspis* type pattern. We dissected one male, but did not observe any characters that would support a generic rank. As with the previous genus, our material is too limited, hence we are not synonymising *Oedaspoides* with *Oedaspis* despite our feeling that this is the appropriate action to take.



Figs 54–58. Aculeus (whole and apex). 54. *O. plucheivora* sp. n. (holotype). 55. *O. serrata* sp. n. (holotype). 56. *O. trapezoidalis* Munro (holotype). 57. *Oedoncus taenipalpis* Speiser. 58. *Xenodorella mira* Munro (holotype).

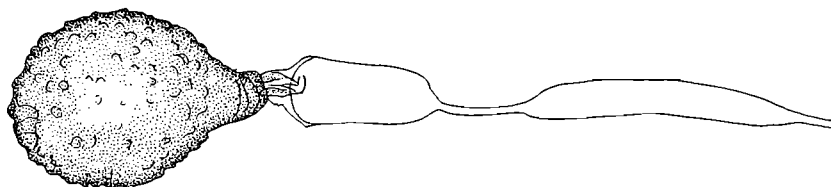


Fig. 59. *Oedaspis reticulata* sp. n., spermatheca (paratype).

[*Ptiloedaspis* Bezzi]

Ptiloedaspis Bezzi, 1920: 9; Hendel, 1927b: 87 (monograph of Palaearctic Tephritidae); Foote, 1984: 119 (Palaearctic catalogue). Type species: *Ptiloedaspis tavaresiana* Bezzi, 1920: 10, by original designation and monotypy.

This is a monotypic genus known only from Spain. We studied a female of *Ptiloedaspis tavaresiana* from Almeria and 1 ♂ 3 ♀ from Andalucia, reared by B. Merz from stem galls on *Artemisia* sp. (ETHZ, TAU). The species has strong autapomorphic characters, such as the short and high eye, the single pair of scutellar setae, extensively setose vein R_{4+5} , and the unusual band over vein CuA_1 in the wing. However, because of general morphological resemblance and similar host preference (*Artemisia* spp.) between *P. tavaresiana* and Palaearctic members of *Oedaspis* (Hendel 1927b), we do not consider *Ptiloedaspis* and *Oedaspis* distinct genera. We refrain from synonymising *Ptiloedaspis* at this point because we believe it should be left to a more comprehensive study of the group, emphasising the Palaearctic species.

Tribe Tephritini Newman

Oedosphenella Frey

Oedosphenella Frey, 1936: 93 (as subgenus of *Sphenella* Robineau-Desvoidy); Munro, 1957: 47 (revision); Foote, 1984: 104 (Palaearctic catalogue). Type species: *Tephritis canariensis* Macquart in Webb & Berthelot, 1839: 117, by monotypy.

Oedosphenella is a member of the *Sphenella* group (Tephritini) as accepted by Munro (1957) and Freidberg (1987). Until now it was monotypic (*O. canariensis*, known only from the Canary Islands). *Oedosphenella* and *Bevismyia* Munro, 1957, also a monotypic genus (type species: *Bevismyia basuto* Munro from Lesotho), are distinguished from other members of the group by the shiny, black, strongly convex scutellum. Munro (1957: 48) stated that 'it was only hesitatingly [sic] that a generic separation was made' between *Oedosphenella* and *Bevismyia*. We believe that the differences in head and scutellum shape, which Munro used to separate the two genera (eg. Munro 1957: 17), are too small to justify this separation. In addition, we have studied an undescribed South African species, whose characters render these differences clinal. After studying paratypes of *Oedaspis auriella* (see below), we conclude that this species belongs to this complex of genera. We assign it to *Oedosphenella* as this is the older name, and we anticipate that eventually *Bevismyia* will be synonymised with *Oedosphenella*.

Oedosphenella auriella (Munro) **comb. n.**

Oedaspis auriella Munro, 1939a: 45; Cogan & Munro, 1980: 540 (Afrotropical catalogue).

This species is known only from South Africa. We have examined 2 ♂ paratypes labelled: Kloof, Natal, ii.1936, W. E. Marriott, M. 519 (NCIP) and dissected one of them. The specimens fit well Munro's (1939a) original description, which is adequate. They have 2 frontal setae, a typical *Oedosphenella* or *Bevismyia* wing pattern (heavily banded, with reticulation within the bands; see Munro 1957), spotted abdomen, and epandrium with prong near the prenisetae, all characters justifying their inclusion in the *Sphenella* group and

essentially different in *Oedaspis* and other Oedaspidini. The scutellum is strongly convex and shiny, like the type species of *Oedosphenella*. However, the hind femur lacks a row of long anteroventral setae, thus differing from the three closely related species of *Bevismyia* and *Oedosphenella* mentioned in the discussion of *Oedosphenella*. This character, however, seems to vary in some other genera of the *Sphenella* group (Freidberg, unpublished observations). The 1st flagellomere is more elongate than in any other studied member of either the Oedaspidini or the *Sphenella* group, but it is closest to the latter. The proboscis is capitate, not reduced as in *Oedaspis*, but also not elongate as in *Oedosphenella canariensis*. Munro (1939) stated that larvae of this species were in spindle-shaped galls on the stems of *Senecio* sp. (Senecioneae). The placement of *auriella* in the *Sphenella* group is also supported by this host record, as all host plants of this group belong to *Senecio* or related genera. However, this information should be used cautiously because one *Oedaspis* species (*maraisi*) also has a host in the Senecioneae (*Othonna*).

RELATIONSHIPS WITH OTHER GROUPS

Since we cannot prove at this point that the Afrotropical Oedaspidini form a monophyletic group, a comprehensive phylogenetic discussion of this fauna would be premature. Instead, the following brief discussion addresses the question of which other groups are related to the Oedaspidini.

One of the most consistent characters in the Oedaspidini is the faculty for gall formation. With only two or three exceptions, all reared species are gall formers on Asteraceae. Gall formation is considered an apomorphy among the Tephritidae, and almost all gall formers of the family belong to one of three tribes: Oedaspidini, Myopitini or Tephritini (Freidberg 1984).

Although there is general agreement now among students of Tephritidae that the Oedaspidini should be ranked as a tribe in the Tephritinae, this was not always the case. The prevalence of white, lanceolate setae on the head and thorax, the lack of scapular setae and a few other characters, including the utilisation of Asteraceae host plants, all support the current notion. However, characters such as the banded wing pattern and values less than 1 for the T6:T5 ratio were used traditionally to justify placement in the Trypetinae. In relation to the Tephritinae, the banded wing pattern together with the modified (usually swollen and shiny) scutellum, reduced proboscis, and faculty for gall formation, are now considered important apomorphies of the tribe.

In the Tephritinae, there are very few groups that share any of these apomorphies with the Oedaspidini. One of these groups is the tribe Myopitini. Myopitini are characterised by banded wing patterns (sometimes reduced, even to nil), a flat or convex scutellum (although never swollen and shiny as in many Oedaspidini), a usually spatulate or geniculate proboscis (never reduced), and a faculty for gall formation. Despite this only partial matching of characters between these two tribes, they may be closely related. Another such group is the *Sphenella* group of genera (Tephritini), that was defined by Munro (1959) and considered related to the *Paroxyna* group (Freidberg 1987). One genus of the *Sphenella* group, *Oedosphenella* Frey, bears a strong resemblance to *Oedaspis*. Like

Oedaspis, *Oedosphenella* has a banded wing pattern and a swollen and shiny scutellum. In addition, *Oedosphenella*, like some other genera in the *Sphenella* group (eg. *Parafreutreta* and *Paratephritis* Shiraki), contains gall-forming species on Asteraceae, especially in the stem. However, this resemblance may be due to convergence. These two groups could possibly be used as outgroups for future cladistic analysis of the Oedaspidini.

ACKNOWLEDGEMENTS

We are grateful to Dr Wayne N. Mathis (Smithsonian Institution), Dr Allen L. Norrbom (USDA) and Mr Bernhard Merz (ETH, Zürich) for critically reading earlier drafts of the manuscript. We thank Mr Walter Ferguson (Tel Aviv University) for the artwork, Dr C. Jeffrey (Kew Botanical Gardens) for identification of the host plants and Ms Nomi Paz (Tel Aviv University) for improving the style of the text. The help of curators (listed in the introduction) in supplying specimens for this study was indispensable and is deeply appreciated.

REFERENCES

- ACZÉL, M. L. 1953. La familia Tephritidae en la region Neotropical. I. (Trypetidae, Diptera). *Acta Zoologica Lilloana* 13: 97-199.
- ALDRICH, J. M. 1929. A revision of the two-winged flies of the genus *Procecidochares* in North America with an allied new genus. *Proceedings of the United States National Museum* 76(2): 1-13.
- BESS, H. A. & HARAMOTO, F. H. 1958. Biological control of Pamakani, *Eupatorium adenophorum*, in Hawaii by a tephritid gall fly, *Procecidochares utilis*. I. The life history of the fly and its effectiveness in the control of the weed. *Proceedings of the Tenth International Congress of Entomology Montreal, 1956* 4: 543-548.
- BEZZI, M. 1910. Restaurazione del genere *Carpomyia* (Rond.) A. Costa. *Bolletino del Laboratorio di Zoologia Generale e Agraria, Portici* 5: 1-32.
- 1913. *Oedaspis*. Genere di ditteri tripaneidi cecidogeni. *Marcellia* 12: 144-156.
- 1920. Species duae novae generis *Oedaspis*, s.l. (Dipt.). *Broteria* Ser. Zoologia 18: 5-13.
- 1924a. South African Trypanid Diptera in the collection of the South African Museum. *Annals of the South African Museum* 19(3): 449-577.
- 1924b. Further notes on the Ethiopian fruit-flies, with keys to all the known genera and species. *Bulletin of Entomological Research* 15(2): 121-155.
- BUSH, G. L. 1966. Female heterogamety in the family Tephritidae (Acalyptratae, Diptera). *The American Naturalist* 100(911): 119-126.
- COGAN, B. H. & MUNRO, H. K. 1980. 40. Family Tephritidae. In: Crosskey, R. W. ed. *Catalogue of the Diptera of the Afrotropical Region*. London: British Museum (Natural History) pp. 518-554.
- COQUILLETT, D. W. 1910. The type-species of the North American genera of Diptera. *Proceedings of the United States National Museum* 37: 499-647.
- DODSON, G. 1987. Host-plant records and life history notes on New Mexico Tephritidae (Diptera). *Proceedings of the Entomological Society of Washington* 89(3): 607-615.
- DRENSKY, P. 1943. Die Fliegen der Familie Trypetidae (Dipt.) in Bulgarian. *Annuaire de l'Universite de Sofia, Faculte Physico-mathematique* (Sciences Naturelles) 3: 123-126.
- FOOTE, R. H. 1980. Fruit fly genera south of the United States (Diptera: Tephritidae). *United States Department of Agriculture Technical Bulletin* 1600: 1-79.
- 1984. Family Tephritidae. In: Soós, A. & Papp, L. eds. *Catalogue of Palaearctic Diptera*. Volume 9, Micropezidae-Agromyzidae. Budapest: Akadémiai Kiadó pp. 66-149.
- FREIDBERG, A. 1984. 6. Gall Tephritidae (Diptera). In: Ananthakrishnan, T. N. ed. *Biology of gall insects*. New Delhi: Oxford & IBH pp. 129-167.
- 1987. *Orthocanthoides aristae*, a remarkable new genus and species of Tephritidae (Diptera) from Mount Kenya. *Annals of the Natal Museum* 28(2): 551-559.
- FREIDBERG, A. & HANCOCK, D. L. 1989. *Cryptophorellia*, a remarkable new genus of Afrotropical Tephritinae (Diptera: Tephritidae). *Annals of the Natal Museum* 30(1): 15-52.

- FREIDBERG, A. & KUGLER, J. 1989. *Fauna Palaestina. Insecta IV. Diptera: Tephritidae*. Jerusalem: The Israel Academy of Sciences and Humanities.
- FREIDBERG, A. & MATHIS, W. N. 1986. Studies of Terelliinae (Diptera: Tephritidae): a revision of the genus *Neaspilota* Osten Sacken. *Smithsonian Contributions to Zoology* 439: 1–75.
- FREY, R. 1936. Die Dipterenfauna der Kanarischen Inseln und ihre Probleme. *Commentationes Biologicae* 6(1): 1–237.
- GOEDEN, R. D. & HEADRICK, D. 1990. Notes on the biology and immature stages of *Stenopa affinis* Quisenberry (Diptera: Tephritidae). *Proceedings of the Entomological Society of Washington* 92(4): 641–648.
- HANCOCK, D. L. 1986. New genera and species of African Tephritinae (Diptera: Tephritidae), with comments on some currently unplaced or misplaced taxa and on classification. *Transactions of the Zimbabwe Scientific Association* 63(3): 16–34.
- HARDY, D. E. & FOOTE, R. H. 1989. 66. Family Tephritidae. In: Evenhuis, N. L. ed. *Catalog of the Diptera of the Australasian and Oceanian Regions*. Honolulu: Bishop Museum Press pp. 502–531.
- HENDEL, F. 1927a. Einige neue Bohrfiegen (Trypetidae) aus dem Hamburgener Museum. *Wiener Entomologische Zeitung* 44(1): 58–65.
- 1927b. 49. Trypetidae. In: Lindner, E. ed. *Die Fliegen der Palaearktischen Region*. Stuttgart: Schweizerbart'sche Verlagsbuchhandlung pp. 1–221.
- HERING, E. M. 1940. Neue Arten und Gattungen. *Siruna Seva* 1: 1–16.
- 1947. Neue Gattungen und Arten der Fruchtfliegen. *Siruna Seva* 6: 1–16.
- 1954. Trypetidae (Dipt.) aus Ostafrikas. *Bonner Zoologische Beiträge* 5: 167–172.
- HILLIARD, O. M. 1977. *Compositae in Natal*. Pietermaritzburg: University of Natal Press.
- LOEW, H. 1850. Sechs neue Arten der Gattung *Trypeta*. *Stettiner Entomologische Zeitung* 11: 52–59.
- 1862. *Die europäischen Bohrfiegen (Trypetidae)*. Wien. 1–128.
- MACQUART, J. 1839. 13. Dipteres. In: Webb, P. B. & Berthelot, S. eds. *Histoire naturelle des Illes Canaries*. 2(2), *Contenant la zoologie, Entomologie*. Paris. pp. 97–119.
- MALLOCH, J. R. 1939. The Diptera of the Territory of New Guinea. XI. Family Trypetidae. *Proceedings of the Linnean Society of New South Wales* 64: 409–465.
- MCALPINE, J. F. 1981. Morphology and terminology – Adults. In: McAlpine, J. F. et al. eds. *Manual of Nearctic Diptera*. Volume 1. Hull (Quebec): Agriculture Canada, Research Branch. (Monograph; No. 27) pp. 9–63.
- MUNRO, H. K. 1935a. Biological and systematic notes and records of South African Trypetidae (fruit-flies, Diptera) with descriptions of new species. *Union of South Africa Department of Agriculture Entomology Memoir* 9: 18–59.
- 1935b. Scientific results of the Vernay-Lang Kalahari Expedition, March to September, 1930. Trypetidae (Diptera), with a description of one new species. *Annals of the Transvaal Museum* 16(4): 609–612.
- 1938. Quelques Diptères Trypétides du Congo Belge avec descriptions d'espèces nouvelles. *Revue de Zoologie et de Botanique Africaines* 31(1): 163–173.
- 1939a. Studies in African Trypetidae, with descriptions of new species. *Journal of the Entomological Society of Southern Africa* 1: 26–46.
- 1939b. Some new species of South African Trypetidae (Diptera), including one from Madagascar. *Journal of the Entomological Society of Southern Africa* 2: 139–153.
- 1939c. On certain South African gall-forming Trypetidae (Diptera), with descriptions of new species. *Journal of the Entomological Society of Southern Africa* 2: 154–164.
- 1939d. Some new Trypetidae (Diptera) from Kenya (Chyulu Hills). III. *Journal of the East Africa and Uganda Natural History Society* 14(4)(65): 1–10.
- 1940. Further South African gall-forming Trypetidae (Diptera) with descriptions of new species. *Journal of the Entomological Society of Southern Africa* 3: 76–87.
- 1947. African Trypetidae (Diptera). *Memoirs of the Entomological Society of Southern Africa* 1: 1–284.
- 1952. Les Trypétides, Diptères Cécidogènes de la série *Eutreta-Oedaspis* à propos de deux nouvelles espèces Malgaches. *Mémoires de l'Institut Scientifique de Madagascar Ser. E*, 1(1): 217–225.
- 1953. Note sur les Trypétides de Madagascar et description de nouvelles espèces Cécidogènes (Diptera). *Mémoires de l'Institut Scientifique de Madagascar Ser. E* 4: 543–552.
- 1957. *Sphenella* and some allied genera (Trypetidae, Diptera). *Journal of the Entomological Society of Southern Africa* 20(1): 14–57.
- 1962. Mission zoologique de l'I.R.S.A.C. en Afrique orientale. (P. Basilewsky et N.

- Leleup, 1957)., LXIX. Diptera Trypetidae. *Annales du Musee Royal de l'Afrique Centrale, Ser. in 8° Sciences Zoologiques* 107: 447–452.
- . 1967. The Trypetidae (fruitflies) of South West Africa with the description of a new genus and species (*Xenodorella mira* gen. et sp. nov.). *Cimbebasia* 22: 1–23.
- NORRBOM, A. L. & KIM, K. C. 1988. Revision of the *schausi* group of *Anastrepha* Schiner (Diptera: Tephritidae), with a discussion of the terminology of the female terminalia in the Tephritoidea. *Annals of the Entomological Society of America* 81(2): 164–173.
- RONDANI, C. 1870. Ortalidinae italicae collectae, distinctae et in ordinem dispositae [part]. *Bollettino della Societa Entomologica Italiana* 2: 5–31, 105–133.
- SILVERMAN, J. & GOEDEN, R. D. 1980. Life history of a fruit fly, *Procecidochares* sp., on the ragweed, *Ambrosia dumosa* (Gray) Payne, in southern California (Diptera: Tephritidae). *Pan-Pacific Entomologist* 56(4): 283–288.
- SPEISER, P. 1924. Eine Übersicht über die Dipterenfauna Deutsch-Ostafrikas. *Beiträge aus der Tierkunde, Königsberg* 1924: 90–156.
- TAUBER, M. J. & TAUBER, C. A. 1968. Biology of the gall-former *Procecidochares stonei* on a composite. *Annals of the Entomological Society of America* 61: 553–554.
- THOMPSON, F. C., NORRBOM, A. L., CARROLL, L. E., FREIDBERG, A. & WHITE, I. M. (in preparation). *A catalog of names of fruit flies and maggots, with information on their classification, distribution and documentation*. Washington, D.C.: United States Department of Agriculture, Agricultural Research Service. (Agricultural Handbook).
- WHITE, I. M. & ELSON-HARRIS, M. M. 1992. *Fruit flies of economic significance: their identification and bionomics*. London: CAB International.

Date received: 25 October 1991